



PROCEEDINGS  
OF THE  
THIRTEENTH NATIONAL CONFERENCE  
ON CITY PLANNING

PITTSBURGH

MAY 9-11, 1921



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OF  
THE THIRTEENTH NATIONAL CONFERENCE  
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## SEQUENCE OF OPERATIONS IN CITY PLANNING WORK.

NELSON P. LEWIS  
*New York City*

Certain aspects of city planning appeal in varying degree to those whose interests and activities have been along well defined, but somewhat different lines. There are some who have been attracted to this and other conferences who are interested in all of the subjects that appear upon the program, but who have hoped that certain phases of city planning work would receive special emphasis, and who may be somewhat disappointed if they do not. Similarly, among those who may be entrusted with the duty of officially formulating and executing a city planning program, there would be this same difference of opinion as to what is the most important object to be attained and along what particular lines the first efforts should be directed. To some the physical problems may make the strongest appeal, while to others the social, or what may be called the human program, will bulk largest and dwarf all others.

To be more specific, there will be some whose interest will center upon the street plan or the general structure of the city; upon the problem of transportation and transit, both inter-urban and intra-urban, and by rail and water; upon the regulation and control of traffic in the streets,—upon any one or all of what may be called the engineering group of problems.

Others will be attracted to questions which concern

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the relation of the city to public utility corporations, or the rendering of public service by the municipality itself, and whether the city can properly supply certain service at a financial loss; to the effect of the plan upon taxable values; to the manner in which the carrying out of a plan is to be financed, and to what extent the principle of local assessment for benefit is to be recognized and enforced; to the extent to which payment is to be exacted for the use by individuals or corporations of any public property, although such use may not be inconsistent with its use by the public,—these being classed as the economic group of problems.

Again there are those who may be chiefly interested in the symmetry of the plan; in the dignity and effective arrangement of public buildings, the approaches thereto and the treatment of their immediate surroundings; in the adoption and strict enforcement of suitable building regulations, including possible measures for the encouragement of better design of buildings devoted to residence or business, such as the remission or reduction of taxes for a term of years on those most meritorious; in the intelligent selection and proper treatment of parks and parkways; in the improvement of standards for various street and park details, such as planting, the location and design of street lighting standards, and in other details which may be considered architectural, using that word in its broadest sense.

There will be those who feel that city planning will fall far short of its chief purpose unless it will insure better housing, making it impossible to continue the building of dwellings in which congestion and insanitary living may be encouraged, affording sufficient space for recreation for both children and adults; with ample space and some direct sunlight for every home; unless

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it will provide facilities for intelligent supervised play for children and wholesome recreation for others with elevating entertainment, such as free concerts, dramatic entertainments, pageants, etc. Emphasis may also be placed upon higher educational standards, more intelligent policies in the treatment of the indigent and of delinquents, and more efficient means of insuring public safety, such as fire protection, and the prevention and detection of crime. This group of problems may be classed as both social and administrative. All of them are of the greatest importance and none should be overlooked or dismissed as non-essential.

It is sometimes argued that the ultimate purpose of city planning is actually social, and that no beginning can be made on a comprehensive plan until the social conditions shall have been carefully examined, and the needs of the district determined;—in other words, that a social survey should precede the physical survey. That such a survey should closely follow the first physical survey or should be made at the same time is most desirable, even though it would add materially to the expense; it should, at any rate, be made before the details of the plan are worked out. If urged as a preliminary, however, there is danger that it will not appeal to some of those whose interest and support are essential to success,—particularly the responsible city officials. Many to whom an appeal for co-operation must be made will not understand just what it means. They will be disposed to label it “high brow”, if they do not attribute it to a disposition to interfere in functions which they regard as administrative or legislative, and as falling within their own jurisdiction and control.

The policy which I wish to urge is to present first to the people something which they will readily understand and the advantages of which are obvious

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and do not have to be proven. As to the public officials who will sooner or later be called upon to accept or reject the plan, it is clearly advisable to give them something which will interest and appeal to them, something the reason for and the benefits resulting from which they can understand without argument. An elected or appointed city official will readily appreciate the great benefit which will at once result from the establishment of a new thoroughfare to relieve traffic congestion, the laying out of a park or playground, the provision of a new school, library or public bath within his district, and he will be quite sure to get behind and push a plan of this kind. If, however, he is asked to provide for something which he doesn't understand, something that may not produce any tangible physical result in the near future or during his prospective term of office, he will not be enthusiastic about it or will be openly hostile if it involves the appropriation of public funds, and cynically unsympathetic or indifferent even if assured that the cost will be met wholly or in part by private means.

Do not misunderstand me: this is not intended as an argument in favor of any particular phase of city planning to the prejudice of any other. Perhaps the point of view will impress you as that of an opportunist. If an opportunist is one who wishes to get results and who is willing to mould his program to that end by placing first those details which are most likely to arouse the interest and secure the cooperation of those whose support is necessary but without abandoning any of the things he knows to be essential, then the speaker is an opportunist. The things to be given emphasis at the start will vary in different communities, depending upon where the authority to approve and advance may lie, the probable attitude of the press, the interest and enthusiasm of groups of citizens and

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the possibility of being able to show that they can be financed without placing a serious additional burden upon the general taxpayer or unduly straining the city's credit.

This does not mean that a complete plan should not be worked out at the beginning. The trouble with most plans has been that they have not been complete enough. When it comes to a decision as to which detail shall be taken up first, either for official approval or actual construction, the chances of progress may be lessened or entirely wrecked by the placing of emphasis upon something which is not fully understood by the man in the street or those in official positions, whose support is essential. This has frequently happened in the past. Pittsburgh is working out an ambitious city planning program. Possibly, this bit of gratuitous advice may be worth your consideration.

# THE CITY PLAN AND LIVING AND WORKING CONDITIONS

## A GENERAL OUTLINE OF THE SUBJECT

JOHN IHLDER

*Manager, Civic Development Department, Chamber of  
Commerce of the United States*

One of my articles of faith is that however large and complex a subject may be, there is always in it a comparatively simple fundamental, to which all the other factors are subsidiary. Our confusion, when we are confused, is due to treating one of the subsidiary factors as the fundamental, or as of at least equal importance. My belief is, that the fundamental in city planning is to make provision for proper open spaces.

To this fundamental even so important a subject as transit is subsidiary, a means to which open spaces is the end. The announced purpose of improved transit facilities, that which has led us to pay for more and more costly means of transit, is to enable people to escape from congested areas to those where there is more open space. If this fundamental is secured, then the problems of securing better working conditions, better housing, better school buildings, more nearly adequate and more wholesome recreation facilities, is greatly simplified. For the greatest difficulty, one almost impossible to overcome once it has developed, is land overcrowding which checks movement and expansion and which shuts out light and air. To secure this fundamental is the main purpose of zoning. Cities that have crowded their buildings too close to-

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gether, that have extended their built up areas without break, are today under a serious economic and social handicap. Cities that still have generous open spaces are today in a position of advantage.

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There are as many ways of measuring a nation's degree of civilization as there are ways of dividing all the world into two parts. One of our army officers recently wrote an article in which he sought to demonstrate that a nation's civilization is measured by its military efficiency. As civilians we may be inclined to question this, instancing the Spartans vs. the Athenians, and agreeing only that today the most nearly civilized nations, because of their mechanical knowledge have the advantage. As city planners we may venture further and put forth our own method of measuring civilization; that nation is most civilized which can forecast the longest future and make the best provision for its welfare during that future.

Like the army officer we can support our thesis by illustrations drawn from the long history of man; the savage who takes no thought of the morrow when his belly is full, the Egyptians whose granaries supplied the wants of the nomadic Israelites during years of famine, the French nobility who dimly foresaw the deluge of revolution but were unable to adjust themselves to prevent or to stem it; markers on the long road toward fore-vision and effective action.

Slowly and painfully the more advanced nations have learned to use the lessons of past experiences as guides for future action. Even more slowly and painfully they have learned that it often pays to postpone immediate profit or even to take a present loss in order that they may build more solidly the foundations of future prosperity.

This method of measuring civilization will not win

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universal endorsement in America. It does not put America as yet at the head of the procession. We are still so young that we are only beginning to measure time in centuries. We have such great natural resources at command that we have a handicap in our favor over other peoples, which inclines us to undervalue the importance of careful preparation and thorough work. Our works are still so new that their defects are, in large degree, still to be recognized. When untoward results follow our efforts they come as the unexpected acts of an inscrutable providence, as typhus came to the people of the middle ages. Moreover, to borrow from the military vocabulary which even religion finds indispensable, the longer the range, the smaller the number of hits.

Our minute men at Bunker Hill held their shots until they saw the whites of their enemies' eyes. Standing only a few feet from a barn door even a poor marksman may score 100% of hits. To a certain type of mind this seems the practical procedure. It wastes no ammunition. And perhaps it would be the practical method if we could disregard casualties while we are getting into position so close to the barn door that missing is impossible. But casualties have to be taken into account. While there is still a great deal of close range fighting, human ingenuity is directed chiefly toward hitting and checking the enemy while he is still far off, leaving to the close range fighter only the job of cleaning up, consolidating a position already won.

Admitting the weakness of analogies in general, this one seems to apply very closely to city planning. With experience of the heart breaking, purse breaking nature of close range work, correcting mistakes of the past while permitting the same mistakes in the present, we have come to recognize that we must increase our range even at the cost of some wasted shots. But like

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our military prototypes, we are learning to make our long shots more and more effective.

With our study of longer ranges we are beginning also to realize certain limitations. No man by taking thought can add a cubit to his stature and no city by wise planning alone can make itself populous and prosperous. We are inclined to think of cities as being as nearly eternal as any of man's works. Not only Rome, but Athens, Jerusalem, and Delhi have endured through the centuries, though Babylon, Memphis, Tyre and Carthage have disappeared. The enduring cities have had in them a virtue beyond material calculation, that kept them going despite political and economic change. But even they have had their transformations, even Rome lived through centuries when it was little more than a village amid ruins.

So we have come to realize that there are forces beyond our control which determine the location and size of cities. The greatest and most constant of these is trade routes. But even the great trade routes change. So Venice lost to Lisbon when Spaniards and Portuguese crossed the Atlantic and went around the Cape of Good Hope, and Lisbon lost to the cities of the North Sea because of distance, winds and ocean currents.

Time was when a natural harbor on the coast, a navigable river inland determined the location and size of a city. Then the man-made or improved harbor and the railroad changed trade routes and established new ports and new inland cities. Now the air-plane promises changes as great as any in the past. Heretofore the topography of a city's approaches has been of first importance. Barring unusual cases, like that of Pittsburgh with its mineral wealth; depth of channels, grades of hills large determined the volume of a city's business, whether

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transport was by sailing ship or steam ship, by muleback, wagon or railroad. As transport by air takes the place of transport on the earth's surface, these factors will be of diminishing importance, and other factors will be of increasing importance. Air currents may determine American trade routes in the future as river valleys have in the past, and an inland region comparatively free of tempests may prove more desirable as a commercial center than one on a water harbor subject to violent winds. For ultimately trade will seek the most economical routes, the most serviceable marts, no matter what the loss to vested interests, since waste in cost of operation in the long run outbalances cost of construction. So, in attempting to forecast the future of our cities it is necessary that city planners take into account the possibilities of air-transport, and not only as a factor in determining location and size, but also in determining layout.

We have arrived at certain general conclusions based upon surface—and sub-surface-transport. The vexed question of through routes vs. terminals has been fairly conclusively answered. The distribution of industries along transport rights of way instead of their concentration near the center of town has received theoretical approval and in considerable measure practicable application. What value will these general conclusions have in meeting the new transport problems presented by the air ship which does not crawl along the ground, shunting off a fraction of its cargo upon convenient sidings, but drops straight—at least it will so drop—from the clouds in which no structure more substantial than a castle in Spain has yet been erected? Will the air-ship bring to all our cities the problems of the harbor town where the cargo must be unloaded at a wharf and the parts thence trucked to their var-

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ious destinations? Or will the air-ship be able to carry many small cars or boxes each of which it may leave on the roof of its consignee? In the former case should ware-houses and industrial plants encircle the air-ship harbor; in the latter will our present railroad rights of way bordered by industrial plants, serve to mark the traffic routes of cargo carriers?

As city planners we are compelled to attempt forecasts of at least twenty-five to fifty years. Some five years ago at one of these conferences when we were discussing the motor-bus I suggested as of at least equal importance a discussion of the air-plane. Today the special mail service of Philadelphia is delayed because the mail plane must land miles away from the center of the city. Within twenty-five years air-transport will be so important a factor in city life that it will have forced considerable adjustments. Now is the time, even with our limited experience and our imperfect knowledge of its possibilities, to begin our preparation.

That preparation, it seems to a layman, will fit in with what we are now doing to make our cities better places in which to live and to work. For what we are doing when we come down to the fundamental, through our city planning, our zoning, our housing regulation, is to secure adequate open spaces, conveniently and economically placed and effectively utilized. There is, of course, much in addition we would do, but it is supplemental, or, because of past mistakes, is substitution.

The reason for the city's existence is business; commerce and industry. The purpose of business is to provide those things which add to the fullness of life, which increase knowledge and understanding, which help to set us free from absorption in supplying our bodily needs and from the fear and superstition in-

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separable from a grubbing existence. Business creates wealth. This wealth, mis-applied though sometimes it is, furnishes the means by which we rise. Individuals, groups of men devoted to the demonstration of some phase of truth, may, despite poverty or because of poverty, make contributions to human progress. But no poverty stricken nation has contributed more than an isolated spark to the enlightenment of mankind.

Our first consideration in city planning must then be given to the needs of business. For if we fail in this we shall fail completely. That is why it is essential to consider trade routes and cargo carriers and the possibility that our cities may some day turn their backs on the railroads as they did on their water fronts. But unless we go further and make provision that our wealth shall contribute to the lives of all our people, our Pittsburghs will some day pass out as unregretted as is Carthage. So there is a balance to be struck between business and living conditions and neither can be considered without consideration of its effect upon the other.

Left to itself business shows a double tendency; first, it forms larger and larger aggregations which acquire a momentum that carries them far beyond the maximum size for efficiency until they become huge and heavy and clumsy, their mere size causing incalculable waste of energy and time; second, the various forms of business tend to segregate themselves, in an instinctive effort to overcome the handicap of the vast aggregate. From the blind tendency of business to grow and grow like a rolling snow-ball, come many of our city planning problems.

First; homes have been pushed farther and farther away from work-shop, the strength and the time of workers is wasted in needless journeys morning and night. To lessen this loss we have invented new means

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of transit to take the place of those provided by nature; horse-cars, trolley cars, elevated, subway, and with each mechanical advance we have not only saddled an increasing debt upon the community but we have fallen farther behind our objective; the business area has grown more rapidly, more solidly; homes have been pushed farther away; and the drain upon the worker, actually lengthened in time, is further increased by unwholesome modes of travel.

Second; the overgrown business area has become more and more densely built and populated until not only do its high buildings injure each other, but their swarming populations impede each other and slow down all movement. They require more and more means and more and more expensive means of rapid transit—never adequate during the peak hours morning and evening, never fully utilized during the rest of the day—to carry them past miles of buildings, the majority of which mean nothing in the lives of the individual travellers. Because of the burden on the land, (public services)—streets, water mains, sewers, become inadequate and must be enlarged. So taxes climb with the skyscrapers.

Yet this concentrating force in city building, strong as it is, does not have the field to itself. In fact there is a question whether it has not reached or even passed its maximum strength, while the less noticed decentralizing force is growing stronger. Our congested urban areas, business and residential, are in large measure the result not of need but of unthinking continuance of old habits of mind. Improvement in means of transit which would have enabled us to live and work under better conditions we have used chiefly to extend and make more unfavorable the areas in which many of us do live and work, until conditions became so intolerable that a few leaders broke away

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from the chains of habit and adopted or established smaller communities, suburban or independent, of the kind we should have started long before.

Granted that the location is well chosen there is little that is inevitable in a city's development. Except for limitations imposed by hills and water, it may be modeled and regulated according to our pre-vision of future needs. Even hills and water may today—or tomorrow—become advantages rather than limitations. For rapid transit, especially the air transit of tomorrow which will eliminate the problem of steep grades and too expensive tunnels, enables us to spread out our cities. So we may keep for the new areas and gradually recover for the old, the fundamental of open spaces.

In every phase of community life we have, during the past generation or two, tended toward centralization, until our whole social machinery has become slower and less efficient than it should be, belying the promise of its impressive size. Our unwieldy business areas have their counterparts in our institutions, private and public. Even so urgent a matter as the relief of our soldiers is delayed because of this over-centralization that makes it requisite for a board in Washington to pass upon the case of a sick man in Seattle. For generations we Americans have worshipped size until we have fashioned a colossus. Now we find that we must begin to articulate the colossus. And now the means, so far as city building is concerned, are put into our hands. What we most need is a clear vision of the city as we believe it should be.

This city will mark not a revolution, but an evolution in city building. Our efforts will be spent not on trying to stem the only natural current, but in making free the way for another current equally strong and more wholesome. We have blindly followed habits

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established in an era of small beginnings and as we have met difficulties have sought to overcome them by ingenious expedients. Having by too close building shut out light and air we substituted electricity and forced ventilation. Now we find the cost of the first so great that we resort to legislative daylight saving and the second so inadequate that we insist upon opening windows—where any are left. Having gone to the extreme of artificiality we are turning again toward a more natural mode of living in which our inventions will serve instead of dominate.

In our evolution toward this more natural and rational mode of living we can keep the advantages gained. The problem is one of re-organization. Instead of a monstrous city spreading out solidly from its central core and engulfing town after town, we shall think in terms of metropolitan areas in which the towns will keep their individuality and will be protected by permanent open zones. The central core has its functions and these it can exercise more effectively if it is not distracted and impeded by activities with which it is not directly concerned. The latter, in accordance with a movement now well under way and which needs only to be guided and regulated, will segregate themselves in the surrounding metropolitan area.

This conception of the city, not as a single unit, but as a related group of units has won wide theoretical acceptance but little conscious application, perhaps because it has been presented both as revolutionary and as a foreign importation, whereas in fact it is neither. If we can put clearly before us the essentials in wholesome city life, both for workshop and for home, and then use our mechanical devices to strengthen instead of destroy these essentials, we shall find that we need only give wider application to what we already are doing.

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First of these essentials, as before stated, is adequate open spaces, conveniently and economically placed and effectively utilized. This definition may leave something to be desired in the way of definiteness, as generalizations do. To supply the definiteness is the task of those preparing a specific plan. But to it might be added another generalization, when in doubt, make the space larger. Except when it means added cost of maintenance, as in a paved roadway, distance has largely lost its terrors.

These open spaces mean almost as much to business as they do to the home, and to the latter they are vital. From the court that admits light for the lowest floor of a business building to the market place, from the yard where clothes may be hung out to dry, where small children can stay in safety, where their elders, when so inclined, can do a little gardening, to the neighborhood playground and the large parks, each of these open spaces has a utilitarian value already recognized by our courts.

The next step in advance will be to secure recognition of the value of larger open spaces adjacent to each town or unit community in a metropolitan area. These spaces will be too large and too expensive to maintain as parks; they will not serve such an obvious need as the market place. They are of the character of the generous house yards now required by zoning laws in the better residence districts of many of our cities.

But when one says that distance has largely lost its terrors he does not mean that city planning should take no account of distances. On the contrary one of the purposes of city planning—or as it has grown to be, metropolitan or regional planning—is to reduce the distances now unnecessarily traveled by masses of urban workers. For most of us the distances that count are between home and work. These have been

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steadily lengthened. Metropolitan or regional planning will shorten them again, bring the home and work once more within walking distance. That in itself will mean a great community saving by reducing the morning and evening peaks on the transit lines and requiring of the latter only a nearer approximation to facilities that will be used all day.

What the maximum population of a unit community in a metropolitan area should be is a moot question and one that in specific instances will often be answered by the topography of the country. The English limit of 30,000 has always seemed to me too small. A city of 100,000 even when generously spaced is traverseable on foot; it permits of generous yards about its houses. At the same time it has people enough to man a considerable number of industries, so escaping the disadvantages of the one factory village. And while it is probable that related industries would seek the same community, as they now seek the same section of a city, the interrelation of the different parts of a metropolitan area would do away with the danger that constantly threatens a one industry city. Such a community is also large enough to have a real community life of its own, to have stores, theatres, music, art, libraries. And it is large enough to call for first class transit facilities to the central city.

City or regional planning would have to do only with the skeleton of the metropolitan area, tracing the main traffic ways and setting boundaries to the unit communities, then leaving to site planning, zoning and housing regulation, the filling in of details. But though the regional plan would set on paper the boundaries of areas to be kept open, there is as yet no way provided to protect these open spaces from the speculator who would extend the built up areas on

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either side until they merge, as they have in Philadelphia.

Zoning will not help us here, for zoning is based upon the theory that any given region may change its character, may, from a district of detached dwellings become a commercial district or one given over to industry. The proposed open areas must, however, always remain open. Consequently there is little or no prospect of enhanced values to hold before their owners. Because of this it would seem necessary that the municipality should buy these open areas. And as they would, in the aggregate, be much too large to maintain as parks, the municipality must have power to lease them to private occupiers for agricultural or forestry purposes, or to cultivate them itself or maintain them in part perhaps as air-ship landing fields and harbors. This power would not differ in kind from that which many municipalities now have to own and lease or manage wharves and markets.

One objection raised to any such plan of setting boundaries beyond which buildings may not go, is that the pressure behind such boundaries will result in higher and closer building there. These proposed open zones—the word zone is here to be taken no more literally than it is in “zoning”, for the regional plan may provide for tongues or isthmuses of built up land connecting the different communities—have been likened to the city walls that constricted cities of the middle ages. But the analogy is very loose. The ancient city walls bound in their populations simply because the latter feared to build beyond them. In England, where fear of an enemy was earliest dissipated, the cities soon leaped over their walls. Much more nearly analagous to the old city walls is the present limit of time between home and shop and the limit to the extension of public services.

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Both of these may henceforth be made aids in the distribution of population. A metropolitan or regional transport and transit system relieved of morning and evening peak loads by a more rational relationship between home and shop, demolishes half the wall. As for public services,—paving, water, sewers, they have already become regional rather than strictly city problems and their cost, despite some increase of length due to wider spacing of buildings, will be diminished by a wiser site planning, by running the trunks through the unbuilt upon spaces and by setting, through zoning, a maximum load for the land which the branches are to serve. Instead of an increasing density behind the boundaries of the open districts, we may look for a decreasing density because of the growing attraction of the smaller communities for industries now cramped in the metropolitan center. It is by distribution of centers of employment that we shall overcome congestion of population.

So the city plan, becomes a metropolitan plan, giving first consideration to the needs of business, as it must, but giving equal consideration to the needs of home—that business may have meaning—will assure to both the fundamental: adequate open space. This it is enabled to do because of means of transit on the surface and through the air which make distance of small account except for the morning and evening journey between home and work. And this journey for the majority it will shorten by limiting the size of the new communities.

There is nothing new about the process except its definition and its guidance. Philadelphia during the past century, developed as the city planner would have his metropolitan area develop, except that it lacked skilled attention to detail and that no open spaces were maintained between the communities which now are

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merged in one great mass of brick and asphalt. Philadelphia and the surrounding towns: Chester, Bristol, Norristown, today are growing toward each other. If they ever merge as Philadelphia and Kensington did, it will be little short of a disaster for all of them.

Now is the time to set and keep the wide open zones between. As in Philadelphia, so in our other cities. Only, with many of them, what Philadelphia should have done fifty or a hundred years ago they can do today.

These then are what seem to me the main factors in guiding city development in the future:

1. Provision for the new means of transport and transit through the air, linking it up with and making it supplemental to existing means of transport and transit. By taking thought now we can save a great loss and waste, and can produce a more efficient system. There is no need of duplicating the mistakes we made when railroads thought their interests lay in fighting inland shipping.

2. Cease thinking of city planning in terms of the present political boundaries of cities and think in terms of metropolitan areas, in terms of regional planning. The old city planning really is little more than extensive site planning. Metropolitan area planning will enable us to get a right perspective, to place emphasis where it should be instead of where compelled by conditions already developed within the congested area and its narrow fringes.

3. Then we can think of transport and transit systems in constructive terms, not in the negative terms of mitigating evil conditions.

4. And then we can at last begin to provide really adequate open spaces. These open spaces are essential to the free, healthy development of our cities. To be adequate they must add to the open areas now defi-

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nitely proposed; yards, street parkways, playgrounds, parks,—a new form of open area analagous to the large yard appurtenant to a dwelling in the better residence districts, and made appurtenant to each unit community—each unit community being fairly definitely limited in size.

These open areas or zones, probably must be owned by the municipality, but they will be too large to buy or maintain as parks. Consequently they must be devoted to other uses which will not involve cumbering them with buildings; agriculture, forestry, air ship harbors.

In this provision of adequate open spaces, generously adequate, lies the key-note of future city planning and city building which will improve both living and working conditions.

## ZONING AND LIVING CONDITIONS

ROBERT H. WHITTEN

*Advisor, Cleveland City Plan Commission*

I want to take a few minutes to discuss with you some of our zoning problems in and about Cleveland. Tentative zoning plans and ordinances have been prepared for Cleveland a city of 800,000, for Lakewood, a city of 45,000 and for Cleveland Heights, a city of 15,000.

The problem in Cleveland Heights has peculiar interest. This is a high class residence suburb. It has an area of nine square miles. Of the 4,500 residence buildings about 90% are single family homes. It has no railroads and no industries. Almost all the lots in the improved area have been highly restricted. Certain areas at first laid out for private residences were later sold as a result of foreclosure proceedings without restriction against apartment houses. Apartments have accordingly been constructed to the very great injury of nearby restricted property. In other areas the restrictions which had been assumed to limit to the single family detached house have been construed by the courts to permit the double house and the two family house. In one or two unrestricted areas a store or oil filling station has been erected to the detriment of a well considered plan of building development.

For the most part, however, Cleveland Heights is unspoiled by haphazard development. It is a beauti-

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ful home section and the people are determined, through the enactment of a zoning ordinance, to preserve it as such. They wish to have the apartments confined to the comparatively small area (about 100 acres in extent) through which they are now scattered. They are inclined to believe that the double house and the two family house should be confined very largely to the areas in which they at present predominate. They want to preserve the great mass of the developed, partially developed and undeveloped areas for the single family detached house.

This public demand, fortified as it is by considerations of the general public interest and welfare, is being carried out in the zoning plan and ordinance now under consideration. The plan provides for three classes of residence districts; single family, two family and apartment house; and for two classes of business districts, the first for the local retail store and second for stores, garages and all classes of business and industrial use actually required economically to serve the wants of a purely residence suburb. Generally speaking, manufacture and industry are to be entirely excluded from the city. As already stated there are no railroads so that the possibility of heavy manufacturing is excluded and the present population is of a class that would not furnish a good labor supply for light manufacturing.

Building lines or front yard areas are required throughout the residence sections. Where there are buildings the alignment of the existing buildings is made the building line and where there are no buildings, future building must be set back a distance equal to 20% the average or normal depth of the lots within the block. Rear yards are required equal to 20% of the depth of the lot. A side yard on each side of every building in a residence district is required.

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At least 5,000 square feet of lot area is required for a dwelling in the single family house district. This means a lot 50 x 100 or 40 x 125. This will permit only 7 families to the gross acre. 40 feet is the minimum width of lot permitted for a dwelling for either one or two families and 50 feet is the minimum width permitted for an apartment house. The requirement of a minimum width for lots will if enacted be a new feature in zoning ordinances.

Another novel feature will be the regulation of fences and shrubbery near the street corners in residence districts with a view to preserving a better angle of vision for drivers approaching the intersection. This will prevent numerous traffic accidents.

The erection of flats above stores will be discouraged and in the small retail store districts practically prohibited. This will be accomplished by the area requirement of a certain number of square feet of lot area for each family for which a building is arranged and by decreasing the number of families allowed in proportion as the lot area is used for business purposes. The store and dwelling building is undesirable for many reasons. The flat over the store is a poor place to bring up a family, is undoubtedly a menace to public morals and the close proximity of living quarters and food salesrooms may be a menace to public health. It seems very inconsistent in an area in which generally only one or at most two family houses are permitted to allow in all the nearby business sections this distinctly lower standard of housing.

While conditions in Cleveland Heights are almost ideal for the development of a good zone plan, conditions in a large portion of the City of Cleveland are almost exactly the reverse. Haphazard development has in many cases done its worst. The side streets which should have been reserved primarily for resi-

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dence purposes are spotted with small stores, shops, milk depots, ice stations, etc. Many of the detached residence sections that should have been retained strictly as such have been invaded by the apartment houses. This haphazard development has resulted in enormous waste and destruction of property values. But this enormous economic waste is not nearly as important as the social and civic loss. One illustration is the immediate decline in the civic spirit and social life of the neighborhood as soon as the neighborhood begins to run down through the blighting influence of unregulated building. From a social and civic point of view, there is nothing more important than the maintenance of the morale of the neighborhood. As soon as the confidence of the home owner in the maintenance of the character of the neighborhood is broken down through the coming of the store or of the apartment, his civic pride and his economic interest in the permanent welfare of the section declines. As the home owner is replaced by the renting class, there is a further decline of civic interest and the neighborhood that once took a live and intelligent interest in all matters affecting its welfare becomes absolutely dead in so far as its civic and social life is concerned. Zoning is absolutely essential to preserve the morale of the neighborhood.

A big problem in every rapidly growing city is the prevention of the horrible congestion of population that has developed in New York City and certain other places. The tendency for a larger and larger proportion of the people of the city to live in tenements or apartment houses is very marked. In the Borough of Manhattan more than five-sixths of the people live in tenement houses. Other cities will approach this condition unless the spread of the tenement house is limited through the adoption of a zoning plan. In 1900,

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the New York Tenement House Commission found that the tenement houses were driving out the one and two family house in the Borough of the Bronx. They suggested that the only way to stop this development was to establish definite tenement house limits similar to the fire limits. If this suggestion had been heeded, large areas in the Borough of the Bronx as well as in Brooklyn and other parts of Greater New York could have been retained for dwelling house purposes.

To prevent undue congestion in the areas that under a zoning plan are set aside for apartment houses, it is necessary to absolutely limit the number of families that may be provided for on a given area of land. Height and area limitations and yard requirements are not adequate to prevent excessive congestion. In the Cleveland zone plan, it is proposed to require 1,250 square feet of lot area for each family for which the apartment house is arranged in the areas where the small apartment house is an appropriate development and 312 square feet of lot area per family for areas intended for the elevator apartment house. In the areas in which the most intensive types of industrial housing now exists, the area requirement will be 625 square feet of lot area per family which will permit about eight families on the 40 foot lot. In most of the apartment house areas the 1,250 feet requirement will be applied and this with other height and yard regulations designed to permit the two story, four family apartment house on the 40 foot lot.

Zoning has been criticised as being anti-social. It is stated that the purpose in the minds of zoning proponents has been to secure such restrictions as would maintain the high class, exclusive character of the neighborhood. It is also claimed that the establishment of highly restricted residence areas under a zoning plan tends to segregate the housing of the indus-

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trial workers in the less desirable sections of the city, and to permit in such sections standards of housing and crowding in tenement houses that is not permitted in the sections populated by the more favored classes. This latter criticism of the zoning movement is very important if true. The first function of zoning should be to protect those who cannot protect themselves and the standards applied to the areas to be devoted to industrial housing should be the highest that it is practical to make without injury to the very class of people that we are attempting to serve. Industrial housing areas should be carefully protected against invasion by trade and industry; the provisions for side, rear and front yards should be liberal; and there should be a definite limitation on the number of families that may be housed on a given area of land.

Coming back to the main criticism that zoning tends inevitably toward the segregation of the different economic classes, I admit the fact but do not consider this result either anti-social or undemocratic in its tendency. My own observation is that wherever you have a neighborhood made up of people largely in the same economic status, you have a neighborhood where there is the most independence of thought and action and the most intelligent interest in neighborhood, city, state and national affairs. In feudal days, the mansion of the lord of the manor was surrounded, at a respectful distance, by the huts of his retainers. It is now assumed that something of this sort would be the ideal arrangement in order to avoid misunderstandings and class hatred. My own opinion is that such an arrangement would be un-American, undemocratic and anti-social. The so-called industrial classes will constitute a more intelligent and self-respecting citizenship when housed in homogenous neighborhoods than when housed in areas used by all of the economic

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classes. The zoning movement in so far as it may be said in a small measure to facilitate the natural trend toward a reasonable segregation of economic classes is neither undemocratic or anti-social. Such effect of zoning is merely incidental. A reasonable segregation is normal, inevitable and desirable and cannot be greatly affected, one way or the other, by zoning.

The problem of zoning and city planning is the centuries old problem of city growth. How to bring large numbers of people together in compact units for purposes of production and trade without creating inefficiency and waste on the economic side or disease and degeneracy on the human side has been an ever present problem since the times of Babylon, or Tyre and of ancient Rome. To secure concentration and specialization without congestion is the recurring problem. Congestion is the disease that here in this form and there in that form assails the comfort, the strength and the very life of the city—congestion of the work shop, of the terminals, of the transit facilities, of the roadways, of the sidewalks and of the habitations of the people. Concentration is usually good but congestion is always bad. The city problem is that of securing concentration and specialization without congestion. It is the problem of securing order through organization.

City planning has to do with the physical framework of the city. Its purpose is to secure a well ordered plan of city growth that will facilitate an increasing concentration and specialization of function without interference, friction and waste either on the economic or on the human side.

Although city planning concerns itself with the physical or structural parts of the city—with streets, terminals, railways, buildings, etc.—its real purpose is not things but people. The city must play its part in

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the world's work. But that work is not simply the creation of wealth or the production and distribution of goods. It includes also the production of men. In the long run it is the success or the failure of the city in perpetuating and developing a breed of men and women strong physically, mentally and spiritually that will condition the life of our states and Nation.

Our big cities will become bigger. They must grow in order to perform their function in the world's work. One city of 100,000 people or 50 such could not play the part that New York is playing today in the world wide organization of finance, of commerce and of industry. It requires a big city to perform a big work and the city must grow with the growth of the territory that it serves. The problem is not to stop the normal growth of the city through a back to the land movement but as Thomas Adams has put it to bring more of the country to the city and more of the city to the country.

Zoning is the first essential to the securing of a measure of orderliness in the building of the city. The common sense of the average citizen leads to a degree of order in the home, the store and the factory that is all but lacking in the life and work of the community as a whole. For want of a well-considered plan of building development each man builds without reference to his neighbor. The result is chaotic. Haphazard growth is inefficient, wasteful and ugly. Why not use the same forethought and care in the building of our community home that each sane man uses in the building of his home or factory? Zoning is the direction of building development along orderly and well-considered lines of city growth. On the economic side, zoning means increased industrial efficiency and the prevention of enormous waste. On the human side, zoning means better homes and an increase of

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health, comfort and happiness for all the people.

Orderly city growth cannot fail to have a marked effect on the physical fitness and vitality of a city's inhabitants. The rapid increase in nervous and organic disorders has some very definite relation to the congestion, noise and confusion incident to the existing haphazard and uncontrolled building development. The New York Zoning Commission said: "The necessity for reducing the stress and strain of city life is becoming more and more apparent. This is essential if the city is to be a place in which our heritage of health and vitality is to be used, conserved and handed down to succeeding generations instead of being abused and exhausted."

## THE EFFECT OF ZONING UPON LIVING CONDITIONS

HERBERT S. SWAN,  
*New York City.*

Much theorizing has been indulged in as to the good zoning would accomplish. But what good has it actually achieved?

That is a question we city planners must answer soon for if the time has not arrived, it is rapidly arriving when our theories must be backed up with solid achievement or both we and our theories will stand discredited.

The time that zoning has been in effect, even in the cities which were the first to adopt it, has been very brief; indeed, much too brief to permit us at this moment to make a precise appraisal as to its ultimate value in solving our planning problems. It is, however, interesting to note that experience is rapidly accumulating to justify the earlier promises—and among them some of the most extravagant promises—as to what zoning would accomplish. From my own personal observation, I can recite instance after instance where zoning has proved and is proving of the utmost value in improving both the technique and the art of living.

### PREVENTING THE SPOILATION OF RESIDENCE DISTRICTS.

In Yonkers, for instance, the zoning ordinance took effect upon the same day that the restrictions in one of

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the largest and finest home sections of the city expired. Here was no fatal hiatus between the time the covenants running with the land terminated and those imposed by law began to operate. Unscrupulous speculators waiting to exploit the suburban character of the district by putting up parasitic buildings never got a chance to file their plans with the result that building under the zoning ordinance went right on where it left off under the private restrictions.

In Newark there was one unrestricted vacant lot in the very heart of a highly restricted neighborhood. The owner of this plot could put his property to any use he chose—an apartment, factory, store or garage; adjoining owners could erect only one-family detached houses. Neighboring property owners repeatedly attempted to enter into an agreement with the owner of this plot with a view to having him bind himself in the same manner that they had already bound themselves but he paid no heed to their entreaties. The result was that all development within a radius of several hundred feet of this plot was paralyzed—no one dared to build himself a home next to this plot—so long as he didn't know to what use it would be put. With the adoption of zoning in Newark, this lot was subjected to substantially the same regulations as governed adjoining lots. Property that was formerly unmarketable is now being developed and improved on all sides of the unneighborly neighbor who is now powerless to give practical effect to his threats of erecting an out-of-place building.

### PRESERVING UNIFORM BUILDING LINES

The requirements as to uniform building lines in front of houses are proving their value every day in such communities as have established them. In Newark, the first city in the United States to adopt a

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comprehensive plan for such control, owners, who have made excavations for their cellars before filing their plans, have on several occasions been obliged to dig new cellars further back on their lots in order to comply with the building line observed by neighboring property owners.

A few months after the adoption of zoning in White Plains, a member of the city plan commission proposed to erect an accessory garage upon his property. As his lot had a small terrace in front, he intended to construct the garage by digging it into the bank in front of his house. Had he done so, the roof of the garage would have projected some five feet above the level of his front porch. The zoning regulations which he himself had helped to frame, however, prevented him from disfiguring his own home. To his present great satisfaction, the garage had to be constructed in the rear of the house.

### PERMANENCY OF DISTRICTS.

A frequent remark heard in zoned communities concerning zoning is that the regulations and districts constitute merely the expression of a pious wish; that they will endure only until somebody wants them changed; that the provisions of the ordinance will be juggled to suit everybody's convenience. Experience affords no support to such statements. Regulations adopted after full public discussion and conference with property owners become so deeply rooted in the community that they can be changed only when thoroughly justified. The first year or two is always bound to be the most trying to a zoning ordinance. The newness of the regulations, the conflict of opinion as to how different areas should have been restricted and the lack of any building carried out in accordance with the plan, all tend to make the first year or so a critical

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period. And yet in communities that have adopted zoning, the changes in districts have been remarkably few. During the first sixteen months of its operation, there have been but five minor changes in the districts laid down by the Newark ordinance. During the first ten months of the Yonkers' ordinance, there has been but one. The districts in White Plains are all identically the same today as eleven months ago in the original ordinance.

### EXCLUSION OF DWELLINGS FROM INDUSTRIAL DISTRICTS

But maintenance of the original zones has not been accomplished entirely without opposition. A brilliant illustration of what pressure an administration will withstand to uphold unchanged a zoning plan is afforded by Newark. The Newark ordinance, it will be recalled, excludes residential buildings from the heavy industrial districts. The areas so treated consist of meadow land, largely salt marsh, developed with chemical plants, tanneries, shipways, foundries, railroad yards, etc., and embraces about one-fourth of the entire area within the city.

As a heavy industrial district, this locality is unequaled in the metropolitan area—low, level ground held in large tracts; deep water, transcontinental railroads; close proximity to a large consuming public and an unlimited supply of stable labor—all afford it an unexcelled opportunity for attracting establishments seeking sites uniquely situated with reference to efficient large-scale production. To allow it to be gridironed with a rectangular street system and subdivided into blocks two hundred feet wide and six or seven hundred feet long with the land developed in 25-foot units would utterly destroy the most magnificent industrial opportunity that ever confronted any community.

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The welfare of the future residential population of the city also demanded the exclusion of dwellings from this area. Any houses erected in such an environment would have been predestined to become slums.

Half a year ago, a manufacturer appeared before the board of commissioners with a petition to have a small portion of the district transferred to a zone in which residences would be allowed so that he might construct sixty-one houses for workmen employed at his plant. The petition was promptly denied. In turning down the request, the city fathers pointed out that the tract in question was so situated that it had practically none of the social conveniences indispensable to residential occupancy, being more than mile away from any store, church, school or moving picture theater; that it possessed none of the public utilities, neither water, gas, streets, sewers nor trolleys; and that to provide these utilities would only squander the city's credit upon improvements which would in the long run prejudice the growth of the city by forcing industries into localities less favorably situated.

Through the exclusion of dwellings from the industrial districts and the exclusion of factories from the residence districts, zoning is being relied upon in Hoboken as one of the chief agencies in the development of an industrial terminal. This plan, among other things, contemplates the complete revision of the street system throughout one-fifth of the city's area, abolishing more than half of the existing streets, widening others and laying out new ones. The plans for this area call for an industrial terminal equipped with facilities of direct rail shipment by every railroad, direct shipment by water from the docks immediately in the neighborhood, cheap power from a central station, and warehouses and factories erected to

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accommodate either single tenants or groups of tenants, with railway tracks connecting not only all the factories with one another but with the piers and the classification yard and through the latter with the several trunk lines. Without zoning, it is questionable whether this plan could even be considered.

### PER CENT OF LOT AREA OCCUPIED BY BUILDINGS.

The provisions limiting the per cent of lot which buildings may occupy is accompanied with so many benefits to the community, direct and indirect, that one can hardly suppress an exclamation of surprise when a long time member of the conference waves it aside with the curt remark that it is "entirely superfluous" and that it "secures little if any extra advantage" while it considerably increases the "cumbersomeness of applying the ordinance". Following out his theory, the zoning ordinance prepared by this member relies exclusively upon the provisions limiting the height and regulating the sizes of courts and yards in restricting the bulk of buildings. So long as buildings conform to these general requirements they may occupy any proportion of the lot area they choose.

Everybody certainly agrees to the proposition that a zoning ordinance should be stripped of all superfluous matter; that provisions securing no extra advantage should be eliminated; and that the control exercised over building development should be as simple and direct as possible. These are axiomatic considerations. Nobody would for a single moment question them. But we do wish our zoning regulations to be adequate to the needs of the situation.

Under the ordinance already mentioned, the regulations permit buildings to occupy from fifty to seventy per cent of the lot even in the districts that are now improved with private houses situated on lots having

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a width of fifty feet and occupying but twenty and twenty-five per cent of the ground. Under the zoning ordinance adopted by adjoining communities similar buildings are limited to thirty per cent of the lot.

This zoning ordinance, however, permits two-story buildings on lots thirty and thirty-five feet wide, generally speaking, to occupy from forty-five to fifty-five per cent of the lot; on lots fifty feet wide, between fifty and sixty per cent; and on lots one hundred feet wide between sixty and seventy per cent. The only limitations preventing buildings from covering the entire lot are the requirements relating to yards—a side yard of a width varying between four and six feet on either side of the building; a rear yard at the back, and a front yard in the case of buildings on streets less than eighty feet wide.

Are our best residence districts entitled to no more protection than is afforded by such regulations? The suburban character of a neighborhood, it is safe to assert, can never be maintained if buildings are to cover from one-half to three-fourths of the land. Requiring an open space of eight or twelve feet in width between buildings is not in itself sufficient to maintain the amenities of one-family or two-family detached house districts. Additional space must be kept open, else the only distinction between our tenement districts and our home districts will be in the height of building and the kind—not the amount of open space surrounding buildings.

Far from being "superfluous", the provision limiting the per cent of lot area which buildings may occupy is one of the most useful in our zoning ordinances. It affords additional light and air; it promotes family privacy; it encourages the maintenance of lawns with grass and trees; it provides additional play space for

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children off of dangerous traffic streets; it segregates homogeneous types of buildings.

### FAMILIES PER ACRE.

For five years past I have at every opportunity, in and out of season, at the risk of being considered a crank, urged the necessity of limiting the ever-increasing congestion of population in our cities.

While the New York ordinance was in its formative stages, I worked for the adoption of a provision limiting the number of families that might be housed to the acre. At that time, however, such a measure was considered too advanced to be taken seriously. Three years later, however, in framing the Newark regulations, I succeeded in getting this provision incorporated in the ordinance, this being the first time that such a provision had ever been adopted in the United States, though Yonkers, White Plains, Cliffside Park, Glen Ridge and Montclair were soon to follow with similar regulations.

The overdevelopment of a small per cent of the city's area may result in a few owners waxing rich, but their "hogging" the land and capitalizing congestion also results in making thralls of many more, saddling them with increased taxes and assessments, and depriving them for years and perhaps forever from deriving any revenue from their property.

Because a building houses fifty families, it does not necessarily follow that there are builders anxious to buy all the vacant plots in the neighborhood with a view of erecting fifty-family houses on them. The contrary is more apt to be true. The fact that a fifty-family house has been built where only a twenty-five family house should have been erected has the effect of obliging one lot to remain vacant which might otherwise have been improved and of holding in abeyance

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the effective demand for it until the increased population again warrants the erection of a large multi-family house.

Objection has been made to limiting the number of families to the acre on the score that reducing the density of population will require the subdivision and improvement of a larger superficial land area. The less densely people are housed, the greater undoubtedly will be the linear length of the streets and public utilities required to serve them. But it is not to be expected that the cost of land per family will increase at all in the same proportion as the diminution in the number of families to the acre. The economies obtainable through the narrower streets and lighter pavements possible with a sparser population goes a long way—if not the whole way—to offset the greater length of roadway, sewers, etc., necessary to develop the land.

The aggregate increment in values throughout a city will not be lessened by limiting in a reasonable manner the number of families that may be housed on a given unit of land. On the contrary, it will be increased, given a broader base and made more stable. And who would deny that view in every way it is more desirable that this increment should be shared by a large number of owners than by a mere handful.

There are persons who believe regulations directly limiting congestion of population superfluous, just as there are persons who believe provisions restricting the percentage of lot that buildings may occupy superfluous. But the method is commending itself to an increasing number of cities—Mr. Bartholomew having obtained its adoption in Evanston, Illinois; Mr. Whitten in Lakewood, Ohio; and Mr. Comey in Milwaukee, Wisconsin.

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### SUBURBAN ZONING.

In the past our states have hesitated and delayed in passing welfare legislation on the ground that the enactment of laws relating to shorter hours of labor, the abolishment of child labor, the provision of old age pensions, compensation for industrial accidents, etc., would result in a situation where the state maintaining the lowest standards would enjoy such a superior advantage in competitive markets as to make the adoption of such laws nothing short of disastrous to local industry. Whether this contention has or has not been borne out by experience is somewhat outside the scope of the present discussion except in so far as it relates to the enactment of zoning regulations. Strange to say, when it comes to zoning, this objection has never been raised. On the contrary, the general impression seems to prevail and very justifiably so, too, that the unzoned community is at a very serious disadvantage as compared with the community that has adopted a zoning ordinance. Especially is this so in the case of metropolitan areas with numerous suburbs.

In such instances, the prospective homebuyer is more and more often asking himself the question, "Why should I buy my home in an unzoned town where my house may at any moment be flanked with apartments, factories or garages and its value seriously impaired when for the same price I can buy just as good a house in a town that thinks enough of its homes to protect them with the strong arm of the law against injurious uses?" The mortgage lender, too, is with increasing frequency asking himself, "Why should I lend my money on property which may at any time have its value so depreciated through the construction of out-of-place buildings that I may be forced to institute foreclosure proceedings and buy the property myself in order to protect my equity when in an adjoin-

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ing suburb I can invest my money in real estate mortgages with the community itself, guaranteeing the value of the property, as it were, against premature depreciation through precipitate and unwarranted changes in the building's environment by preventing the intrusion of undesirable uses in the neighborhood?"

The practical effect of these considerations is most interesting. The zoned localities are not only absorbing the better grade of development at the expense of the unzoned suburbs, but they are forcing the undesirable types of development into the unzoned towns. The builders, architects and real estate owners in unzoned towns are with increasing persistence urging their councils to adopt zoning so that they may have as good a sales proposition to make to prospective clients as competing builders, architects and real estate owners in zoned towns.

An occasional sale lost now and then to a rival zoned suburb and the increasing reluctance on the part of lending interests to make loans on unprotected property, or if making loans their discrimination in favor of protected localities with reference to both the interest rate charged and the amount loaned—considerations like these are proving more eloquent than words in actually stirring unzoned towns to action. Though these communities have done nothing to adopt zoning, it is not quite exact to say they are unzoned. The adoption of zoning by neighboring communities has in a sense already zoned them. Without their knowing it, they have been placed, as it were, in the position of unrestricted districts to their neighbors. Though they themselves may not have moved, their neighbors have. Today, therefore, they are not at all in the position they were in years ago when building was unregulated everywhere. Then, due to the uni-

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versal lack of control, they stood on a par with their neighbors—ownership of property within their boundaries was accompanied with neither privileges nor servitudes not accompanying it elsewhere.

But now, this has all been changed. The fact that property is protected elsewhere makes its ownership in those places more desirable; that it is not protected here makes its ownership locally less attractive. To permit our neighbors' garages and factories to locate indiscriminately in our residence districts while he excludes ours can have but one result—it destroys the marketability of our residence property at the same time that it makes our competitor's more saleable.

Zoning is both a positive and a negative factor in the development of a community—it encourages superior types of development; it discourages inferior types of development. Its mandatory provisions oblige things to be done which otherwise would not be done; its inhibitions prevent things from being done which would otherwise be done. It stimulates, checks, guides—all to the benefit and lasting good of the community. As time passes and the lines between different districts become more tightly drawn, the development of each district being shaped by the regulations, the benefits conferred by zoning will accumulate, increasing with the years, correcting past errors, revealing and realizing new opportunities, all the time operating for the betterment of the community and enabling it ultimately to become a community such as without zoning it could never have hoped to become.

## HOW ZONING AFFECTS LIVING CONDITIONS

GEORGE B. FORD,

*Director City Planning Department Technical Advisory  
Corporation, New York City.*

The only way to get satisfactory results in zoning is to have the matter studied logically and scientifically. What does the man, woman or child do with his twenty-four hours? How can zoning benefit them during their eight hours of work, their eight hours of sleep or their eight hours devoted to eating and recreation?

The point of departure in determining the development of almost all, except rural, communities is economic. This means, industry, business and transportation, of which industry is the most fundamental. It is worth while to take a few minutes to analyse the economic growth of towns and cities and in doing so I am basing my conclusions on what Mr. Ernest P. Goodrich, one of my associates in the Technical Advisory Corporation, and I have discovered in the course of our investigations in various of the following cities in which we have been doing city planning or zoning.

To start with cities of from 15,000 to 50,000 inhabitants, such as Mansfield, Ohio, Lincoln, Nebraska, or Arras or Soissons in France, we find industry concentrated in a rather small compact group.

When we come to cities of from 75,000 to 150,000, such as Omaha, Nebraska, Elizabeth, N. J. or Rheims

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in France, we find industry spread in feelers along the railways and waterways. In cities of from 200,000 to 500,000 inhabitants such as Newark, New Jersey, Los Angeles, and Lille, France, we find industry spread spasmodically through the town and often in quite inappropriate districts. We also find problems of commuting and rapid transit which seriously complicate the situation.

In cities of a million or more such as New York, Paris or Detroit, industry is scattered throughout many localities and transportation and transit have become all-absorbing problems.

With regard to the development of business in towns of 10,000 inhabitants or less, such as Dobbs Ferry, N. Y., Caldwell, Westfield, South Orange and Roselle Park, New Jersey, we find business concentrated in a small area in the center of the town at a crossroads or spread along a single main street.

In towns of from 10,000 to 50,000 inhabitants, such as West Orange, New Jersey, Mansfield, Ohio, East Orange, Rutherford or Orange, New Jersey, we find a considerable spreading of business, not only extending back along a number of streets leading to the center of the town or to the railway stations, but here and there, stores or store groups have sprung up at convenient corners in the residential districts.

Thus as we go on up through larger and larger cities, we find long feelers of business extending out along the lines of the principal traffic or transit and gradually the gaps are filled in so that the former scattered stores are brought into a continuous row of business houses.

In zoning it is most important to know how much business space to allow in any community in proportion to the amount of residential space. This can be calculated quite accurately because the zoning maps

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permit us to determine approximately the eventual maximum population of any street or block in the town. Furthermore, our investigations in half a dozen cities have shown us that the number of stores vary from one for every forty inhabitants to one for every one hundred and twenty-five inhabitants with more stores relatively in the smaller communities.

In communities of 25,000 inhabitants or less we find that we should allow one store for every fifty to seventy-five inhabitants but the individual stores would be smaller on the average than they would be in larger communities. In communities of from 25,000 to 100,000 inhabitants we should allow one store to each seventy-five to one hundred inhabitants and in communities of over 100,000 inhabitants, with the introduction of the department stores and other large groups, one store to one hundred to one hundred and fifty inhabitants would be quite sufficient.

However, outlying parts of even a large city often have to be treated like a small community, despite the fact that the individuals living there would buy many of their commodities at the large stores in the center of the city.

With regard to housing and congestion we have rarely found other than one-family houses in communities of 10,000 inhabitants or less and in fact there are many suburban residential communities which are considerably larger than this that contain hardly anything else. However, as a general rule after you pass the 10,000 inhabitant limit two-family houses begin to prevail in many parts of the town except around Philadelphia, Baltimore and Washington where two-family houses are replaced by the row house.

Tenement houses rarely begin to appear in any numbers until a city has attained about 25,000 inhabitants. Apartment houses are rarely prevalent in cities of less

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than 50,000 inhabitants or in metropolitan residential suburbs of less than 25,000 inhabitants. In the East we find that there is one tenement or apartment house to every 100 inhabitants.

Aside from the standpoint of sentiment or possibly esthetics there is little that is wrong with the two-family house, the tenement or the apartment, except the tendency to inadequate light and air, undue congestion, lack of privacy and of a place for the children to play. If these four features can be taken care of properly there is little that is harmful about congestion so-called.

The solution of these problems lies not in the policy, so difficult of enforcement, of limiting the number of families per acre, which is a palliative, imported from England, but rather by providing adequate yards and courts and a reasonable amount of open space in front of each window, front and rear, side and interior. If this is done properly, undue congestion will be taken care of effectively by indirection.

On the other hand if room congestion is taken care of in a zoning ordinance it should be done frankly in the same way it is done in the tenement house laws by limiting the number of square or cubic feet or air per person in living and sleeping rooms.

We have found that we get vastly more satisfactory results in a much simpler and more direct way by specifically stating the minimum sizes of front yards, side yards, rear yards and courts which must be increased in size as the building goes up in height and as the lot increases in size. If done properly it makes wider lots desirable a better business proposition.

Similarly we find in practice that there is little or nothing gained by employing the cumbersome process of limiting the percentage of lot occupied, for appro-

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priate front, side and rear yard provisions solve the problems of securing adequate light and air and relieve over-crowding in a much simpler and more logical way.

Rather than limit the percentage of lot occupied we would recommend the more reasonable expedient which Mr. E. P. Goodrich has used in the Westfield, New Jersey, zoning ordinance where he made the front yards, the side yards and the rear yards each a certain minimum percentage of the area of the lot. We have applied this latter principle to at least 500 typical existing buildings and found that it works surprisingly well and causes no hardship.

With regard to recreation and the use of leisure time the same principles apply that we have discussed above. The studies that we made a number of years ago in Newark, N. J. showed in considerable detail the effective radius of influence of each park or playground of a given character or size. In other words once we have established our zones we find, in practice, that it is easier to calculate definitely the size and location of each and every place needed for recreation.

It would probably be interesting to see how the principles that we have been discussing would apply to a typical case for the creation of a well-rounded out community. When I was working on the plans of Rheims in France the problem which was propounded to me was to take the city of 125,000 inhabitants, as it was before the war, and plan for its development to become eventually the great industrial center of the whole region with possibly 300,000 or 400,000 inhabitants. Five railways and three waterways radiate through it.

Our plans provided for an industrial sector radiating along each of the railroads and waterways with alternating radiating sectors between them for the housing of the wage-earners, while an especially wide

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sector on the southern hills was used for a high-class residential development.

The principle behind the creation of these alternating radiating sectors of industry and of workingmen's homes was to provide that the workingmen could walk back and forth morning, noon and night from the places where they live to the places where they work, on one side or the other, without having to encumber the transit lines or to cross the center of the town. Furthermore, it means that from residential parts of the town access is quickly gained to the centers or to the outlying country, along a radial, without having to cross an industrial district.

In the center of the town and near-by, small playgrounds and parks attached to the schools were located where needed in the dwelling sectors. Farther away from the center larger playgrounds, playfields, and parks were provided for, while in the outlying district were large parks and reservations with connecting boulevards and also large market gardening zones were set apart.

This scheme permits the growth of industrial satellite towns along the railways, and waterways, which would be eventually absorbed into the extension of the original and industrial sectors as the city grows.

General business and administration would be concentrated in the center of the city, but local business would follow the arteries radiating to the residential sectors and the main cross thoroughfares used by workers in going back and forth to the industrial sectors on either side.

We find in studying a number of American cities that this same schematic principle of growth applies generally. Just in proportion as a city tries to approach it, it will develop in an orderly and desirable manner.

# THE EFFECT OF TRANSPORTATION UPON THE DISTRIBUTION OF POPULATION IN LARGE CITIES

H. M. BRINCKERHOFF.

*New York City*

This subject might with greater accuracy be stated as "The part played by transportation in concentrating population in large cities".

This is not the accepted popular idea of the relation of cause and effect in this matter, but it is true that large American cities of two, three or four million people could not subsist, nor could their inhabitants earn a livelihood, without the functioning of the various modern forms of transport—freight and passenger.

This largely accounts for the fact that cities in old countries such as China and India where over five times the national population density of the United States exists, have never grown above the million mark. The ox cart and the man propelled jinrikishaw could not maintain the necessary transport of even the bare food necessities to a city area of 200 square miles and three million population such as we find in Chicago.

Without railroads the supplying of raw materials and the hauling away of the finished products for the aggregation of workers which such a population center must include, would present enormous difficulties while the lack of urban passenger carrying facilities of great capacity would inevitably create densely

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crowded tenement districts in manufacturing areas with the consequent bad housing conditions.

The life, health and even the morals of our large American cities of which we often thoughtlessly boast, are intimately involved in and seriously affected by this basic necessity of transportation.

The principal difficulty in approaching a subject of this kind and speaking definitely upon it is that the vital facts underlying the whole question of population distribution are not generally available.

The most easily recognized causes directly affecting the city population are of two kinds,—first, those which arise from general economic conditions such as appeal to large classes of workers and second, those which are purely artificial and brought about through the effort of individuals or groups endeavoring to stimulate building operations or to colonize certain districts such as the development of new subdivisions or the building of housing facilities by factory owners in order to accommodate employees near their own plants.

Passing from these more general causes to the one which has been assigned for this particular paper, we come at once to the question of how we ought to approach the transportation question in its relation to the development of cities.

Let me suggest that we lay aside for the moment the traction manager's consideration of passengers per car mile, rate of return, etc., as well as the anxiety of the city official as to how the next election will be affected and instead strike right at the root of the matter.

How can the average family be best served with transit lines from home to work and what consideration will then affect this home location?

Our war experiences have so accustomed us to deal

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with huge masses and broad classification of men, billions of dollars and world wide policies that we gaily generalize in nation wide prohibition and forget that each one of is in the last analysis an individual with a home and family of his own. It will be a novelty and a relief to take the viewpoint of the individual and the home and try to put something personal into our discussion.

In studying the effect of transportation on cities as they exist today, we must remember that the great majority of the transportation lines have been built as business enterprises for the profit that can be made from them. This is no slur on an important and necessary industry, but in our present analysis it must be kept in mind.

Business for profit sounds like humor of a grim order today when thus applied, but the fact nevertheless is that such was the original incentive and the impelling motive in the building up of most of our city transportation systems.

The location of these transportation lines, therefore, must be regarded as the best judgment of their promoters, as to how to secure the largest number of passengers from a given district and not as due to a study of ideal city planning.

As a result of this process we find in most of our cities the transportation lines terminating at what traffic men call the general delivery district, which is usually the retail, banking and office building center of the city.

Notable examples of this are found in such cities as Chicago, Detroit and Cleveland.

In earlier New York, considering the latter as Manhattan Island, the traffic used to be largely north and south, the long way of the Island, but Greater New York, or more exactly Metropolitan New York, has de-

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veloped an intensely radial character to its transportation.

The effect of this method of lines radiating from a common center has tended to progressively move the population outward from their principal point of employment into less densely populated districts for the building of homes, and were this central district the only point of employment in the city area we should have much worse traffic congestion conditions than even those endured at present.

Fortunately, however, the employment areas have been broken up in most cities by the necessity for locating manufacturing establishments along the various railroad lines or water fronts for the easy receiving of raw materials and the shipping of finished products.

Thus we have in Chicago at least thirty-one employment districts to which the city's workers daily ride from their homes. Each district forms the center of a web of radiating lines reaching as you will see later a surprisingly large number of the city's residential quarters.

Turning the picture the other way about we see residence districts as centers and from each of these a net work of individual routes reaching out to an equally remarkable variety of employment centers.

The composite of these many spiders' webs constitute the transportation problems of a city.

Of this the rush hour riding in a large commercial and industrial city is most difficult to solve. If the crowd of workers going to and from their places of employment can be handled, the off-rush hour travel can usually be taken care of easily on the same system.

The problem, therefore, of hauling workers becomes the dominating objective of the traction manager and as he succeeds or does not succeed in giving adequate

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facilities, so will the distribution of population be directly affected.

The importance of this accommodation will be appreciated when it is understood that in four hours of the twenty-four there must be handled 55 to 60% of the total travel. The question goes much further than the mere physical inconvenience of those who have to travel. The successful operation of large industries is often at stake and in consequence much of the industrial prosperity of the city is directly involved and even to a considerable extent the health and even the morals of the rising generation.

The average American family consists usually of about five people—the father, mother and three children. Such a family in this country is quite unlike in its habits those in a similar station in life in the older countries of Europe.

Over there the children usually follow the trade of the father and for generations live in the same house or immediate locality and work in the same factory.

In our modern industrial American city, however, there radiates from the family home a great diversity of routes followed by different family members. The home may be located near the employment of the father, but the sons generally go into entirely different trades and seek employment in widely separated parts of the city. Similarly with the daughters, one teaches school, another is a saleswoman, etc.

It thus comes about that bad transit facilities tend to break up while good service may help to preserve the unity of our American city homes.

It may be of interest on this latter point to relate that Judge Tuttle of the Juvenile Court in Chicago, stated that in his experience from fifty to sixty per cent of the juvenile delinquents brought into his Court could trace their troubles to leaving home before they

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were old enough to make their way in the world in order that they might live nearer desirable places of employment.

In order to follow this line of thought of the individual or family unit forming the basis of our study, let us turn to some facts of employment and residential location of large groups of workers in Chicago.

### *The Loop District of Chicago*

Studying the home location of 115,000 people daily employed in the loop district we find that the heavy grouping of the homes of these people is along rapid transit lines. Less than four per cent. of these people walk to their daily places of business, whereas the average of the whole city of Chicago is about 24.4% of walkers and some of the factory districts run well over 40% and a few, such as the steel mills run to 50 and 70%.

For the purpose of illustrating our own subject to-day it will be seen, therefore, that the class of workers engaged in such a district as the central portion of Chicago, usually seek homes at a considerable distance from their employment and will follow very largely the rapid transit and steam railroad lines. This is found true in Detroit and Cleveland but these cities being smaller the characteristic is not so marked. The average distance of the homes from employment for this group is 5.05 miles, next to the highest in the city, being exceeded by only one, an office building district along side the Illinois Central Railroad. 42% live from three to six miles from their employment. Nearly 4% live 16 miles or more away. This is typical for this class of city district.

### *Western Electric Factory District*

*11,688 employees.*

The plant is located in the southwesterly portion of

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the city and you will see that the distribution of these people while it is scattered all over the city, has a much larger proportion near the factory itself, 21.8 being within 1 mile and classed as walkers.

The predominating groupings are along the lines of the elevated railroads and the north and south cross-town surface cars. The importance of a variety of lines to supply transportation to such a center is quite obvious. Beyond 5 miles there are only 13.6% living. The average distance for the whole group is only 3.03 miles.

### *Stock Yards District —28,883 employees.*

Here is a typical factory grouping of an entirely different character.

The stock yard employees are predominately negro or of foreign descent. They have congregated close around this employment center because for many years the transportation to and from this part of the city was extremely bad.

47.7% of these people are walkers, the highest in the city of any group, except the steel mills. Even here it will be noted that a great number come from considerable distances and also that they are drawn from a great many localities. The average distance for the whole group is 1.66 miles. The effect of many years of bad transit to this district is markedly shown.

If we had time to look at thirty more districts analyzed in the same manner, you would simply find many variations between the extremes of the stock yards and steel mills on the one hand and the loop district on the other.

In all, however, you would see the common element of wide distribution of the employees as to their home localities, in some cases 40% come from beyond a six mile radius.

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In order to appreciate the reason for this condition, let us state the facts regarding the transportation system serving them.

Chicago has an elaborate system of east and west and north and south surface car lines forming a rectangular network over the entire city area.

These are intersected by a certain number of radial lines all forming a unified system and giving free transfers. A tremendous transfer business has resulted, practically seventy-five per cent as many transfers being collected as there are cash fares.

Besides this street car system the elevated railroads throw out radiating rapid transit lines, centering however on a loop in the down town district.

The entire 200 square miles area of Chicago under this system had developed in 1916 an average residential density of about 20 people per acre, with a maximum in the most crowded districts of not over 250 people per acre and this for very limited areas.

As a result of this diversified transit service the predominating character of housing or homes is the one and two family detached house over wide districts. These figures compare with 600 to even 1,000 per acre in New York tenement districts.

It may, therefore, be accepted as a fact that the comparatively even distribution of the population and the system of independent homes is affected very directly by unification of the transportation system and freedom in transfer.

### *Detroit Distribution of Population*

In the City of Detroit we can see the effects of an almost exclusively radial system of transportation.

Until very recently the crosstown transportation has been extremely meagre.

A marked axis has developed north and south along

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Woodward Avenue, the population lying almost exactly equally on either side of this axis and distributed very uniformly.

This uniform distribution, however, is not wholly due to the effects of transportation, but more particularly to the location of the employment districts.

A semi-circular ring of factories following the steam railroad lines forms the centers toward which the workers move to and from their homes.

Lines of factories along the water front also attracted a considerable travel, but these being the older industries have a larger proportion of walkers.

### *Tabulation of Factory Workers in Detroit*

In eleven factory districts we find 28% of the employees are walkers. The Ford factory shows a very wide distribution of its employees all over the city largely due to its location on a line which receives transfers from practically every other line in the city. At the central point in Detroit, at the city hall, about 56,000 people were found to transfer in ninety-two different directions on one ordinary week day. The heaviest transfer point in Chicago in 1916 was the corner of Milwaukee, Halstead Street and Grand Avenue, where about 28,000 people were transferred a day. This Chicago intersection was used in sixteen different directions or routes.

Detroit illustrates the distribution of population by the presence of scattered factory employment and showed in 1916 a very low density in even the most crowded districts. Since that time, however, the increase in population has been very great and the transportation not having been kept up with the growth, a much greater density has occurred by crowding into the districts surrounding the factories. This poorer transportation has noticeably affected the ability of the fac-

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tories to draw employees from all sections of the city. Universal transfer and a unified system has been beneficial.

### *Cleveland—Distribution of Population*

In Cleveland we find quite a different population distribution due to physical characteristics of the city area which is divided by a deep ravine occupied by the Cuyahoga River and crossed at only a few points by high bridges or viaducts.

The transportation lines have tended to spread the population east and west. This is, of course, a disputable statement, but the fact is that the best transportation facilities lie in these directions and the population growth has undoubtedly followed along such lines.

A very remarkably high percentage of walkers is found in Cleveland in the factory districts. This is due apparently to the long establishment of these industries in a fixed location and very steady continuous employment, inducing the people to permanently locate near their work.

We therefore come to the point in our analysis where we are confronted with the fact that the great future of our cities as to their population distribution can be controlled or at least largely guided by the building of transit lines.

That this great function of city life should be given most careful study, is obvious. But it is also true that it must be done with broad and unselfish vision if the best results are to be obtained.

City planners can do much by keeping in mind this fact in their work and also can they help if in their dealings with city fathers and traction officials they bring about a better appreciation among both of the far reaching effects of discord and strife upon the city

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as well as the transit companies. The problems of city transportation have today grown to such magnitude as to demand the united financial strength as well as the wisdom of all interests.

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City planners can do much by keeping in mind this fact in their work and also can they help if in their dealings with city fathers and traction officials they bring about a better appreciation among both of the far reaching effects of discord and strife upon the city as well as the transit companies. The problems of city transportation have today grown to such magnitude as to demand the united and combined financial strength as well as the wisdom of all interests.

To this end you men and your organizations can help greatly and I trust this discussion has been helpful in bringing some of the facts more clearly before you.

### DISCUSSION

E. M. BASSETT, *New York City.*

The subject that the speakers have discussed is fundamentally distribution of population. This has an intimate relation with light and air, is concerned with rapid transit and all other forms of city transportation and has a relation also to main traffic arteries.

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I am inclined to think that the statements made by Mr. Whitten must be admitted; that in New York City, like all great cities that are entering into the remedy of zoning, there is not as much accomplished for light and air as ought to be accomplished, but in every great city we run up against insistence of the land owners, and desirable ideals are not achieved in the city councils. It is not probable that the ideal will be reached in any of the cities that are doing zoning today. However, the emphasis that was placed upon increased light and air by the four last speakers is something that we must push for progressively. We are all wise enough not to say that the city has made a mistake because it has not done the ideal thing. If we accomplish even 10 per cent toward the ideal, we have helped pave the way for something better that is coming.

Mr. Ihlder's suggestion is that there should be surrounding belts of open territory about all our cities or that there should be satellite cities surrounding all our great cities. Merely to say that that ought to be accomplished in cities is not bring it about until something of an economic nature happens in those cities which makes a majority of the population appreciate that that city is falling behind economically and that cities that have a better lay-out are going ahead of it industrially. Zones and open places may come not because a few men in the United States insist upon it but because of economic pressure. All cities will not bring the city into the country nor the country into the city and some will learn by falling behind in the race for industrial success.

This new application of police power, commonly called zoning, is the effort of a community to control its affairs for the benefit of health, safety, morals and the general welfare, and is even now only being faintly

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understood. Who can say that the day may not come when the application of the police power will be projected into the lands around a city before they have reached a high value by imposing under zoning the requirements that certain localities shall be left as open or farm places. But this introduction of "the lungs of the city" will not come for a long time ahead and we must give our attention today to pressing problems which can be solved and not so much to matters which may not be possible of solution from ten to one hundred years ahead.

New York City methods are far from ideal as to congestion of population. The reason for this is not because more ideal restrictions could not be conceived, but because we had to do what the average intentions or ideals of the city would allow us to do. New York City in its height regulations and area requirements is not a pattern for other cities.

The suggestions made by Mr. Whitten, Mr. Ford and Mr. Swan show zoning methods which can be adapted to particular cities and surpass what was done in New York. The next place in zoning to New York City was St. Louis and there Mr. Bartholomew improved the method of making zoning maps. I want to point out especially the need of doing the best possible when drafting the zoning ordinance and maps. It may take from one year to five years to establish zoning, but it will after adoption become more permanent than you anticipate because it is so extremely helpful to a city that it is almost impossible to change it. So it is of the greatest necessity to have at the start as perfect and harmonious a plan for the city as you can. The City of New York however has evolved a system of checks, relating to the distribution of zoning powers and these have been passed upon by the Courts from time to time, so that the application

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of police power to zoning and the methods of distribution of powers are perhaps more highly perfected in the City of New York than in any other place.

MR. IHLDER:

With regard to the contention that we should think of our cities as frames for arteries and highways, it seems to me that that attitude of mind is not general. Even in this meeting some of our engineer friends in talking today spoke as if an extension of our transportation systems along the old lines would help us in distributing population, and yet all our experience goes to show that it is not an increase or improvement of the transportation lines along the old way we want, but a distribution of the centers of population and a distribution of the centers of employment.

HARLAND BARTHOLOMEW, *St. Louis*:

The question of the distribution of the population and its density is one that I believe is more important in zoning than has yet been regarded. Our restrictions for area and for height, generally follow practices already established, conforming more or less to the conditions which already exist. If zoning is a contribution toward the general improvement of cities the direction of that contribution invariably must come through the enforcement of area regulations. I have felt continually through this work the principal contribution of zoning must come through area regulation. I do not agree at all with Mr. Ford that it can be done by ignoring the density regulation. As an illustration Mr. Whitten suggests three hundred and twelve square feet of lot area per family for areas intended for the "elevator" apartment houses, or in-

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terpreted in terms of families: one hundred and forty families to the acre of ground. I think that is out of reason. It is too dense. I proposed to the Program Committee a discussion today merely on what is a limit of density of population under zoning ordinances. The question should be answered. Here we have a statement that there should be one hundred and forty families to the acre of ground; others say there should be eighty families per acre as a maximum. What is the limiting factor? What should be the limit of density? Is it the value of ground?

Just last week I had a very interesting case that set me to thinking on this particular question, when the principal speculative apartment house builder in St. Louis came to me and said our zoning ordinance practically prohibited an apartment building that could be financed in the only district in the city where apartment houses could be built. He meant our best residential district—spoiled by apartment houses where owners have increased value until the point has been reached when zoning regulations conflict with the ability to build speculative apartment houses. It is a serious question and one that ought to be answered and the thing that appealed to me in it was this: If prices of land have been increased beyond the point which they should have been and we are constantly adding more and more people to the land only to pay for these speculative increases, then, through zoning we must stop this increase of speculative value and prevent the concentration of population and spread the people out.

The question I am not prepared to answer is what are the densities we want to secure. My personal opinion is that one hundred and forty families to the acre of ground is too high. Certainly in all big cities we are keeping it below that figure. It is said that we

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cannot accomplish more. We ought to think seriously as to what densities we want to secure. There are many economic forces at work. One of them occurred to me while one of the speakers was discussing the topic. That is that decentralization is coming about in many instances. The sales manager of one of the largest drygoods houses in the middle West told me that their experiences were beginning to show that department stores and drygoods houses were as a general thing getting smaller, and that the tendency was to build more smaller stores in different parts of the community in order to serve directly the people, rather than to concentrate their business in the central district.

ARTHUR C. COMEY, *Cambridge, Massachusetts.*

I agree with Mr. Ford that density restrictions are not necessary. In Milwaukee we followed the precedents in St. Louis and Newark but we threw out the high density rules. A density regulation for instance of 140 families to the acre amounts to an invitation that there should be that degree of density. Most of the cities do not want it, and we certainly do not want to encourage such a density. We are seeking light and air and not any given arbitrary number of families per acre. There is no intrinsic merit in such a restriction. If we get adequate light and air in our buildings whatever density results is the density that we are after.

As to what can be done in the matter of spreading or distributing population, in Brookline we have proposed and will probably adopt a by-law which requires really decent apartment house conditions, a thing I have not seen in the laws of other communities. The tall apartment house may occupy only a very limited

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strip along one or two main arteries. Elsewhere it is provided in the by-law that apartments may be built but three stories high and but two rooms deep. Courts, if they see fit to put them in, shall be only one-third as deep as they are wide.

I think, speaking to Mr. Bartholomew's point,—the figure for density of building or in other words the percentage to be occupied,—whether or not you require a percentage in front, on the side, in the rear, and in every other way and make everybody go along together producing the same kind of houses, it is absolutely unnecessary. A hard and fast rule which will act as a bludgeon through the city will not give any better results than proper court requirements; that is, requirements for amount of window space, opening on a proper court with proper light, adequate to light that area.

Another point,—I do not believe you can successfully zone for open spaces. I do not believe there should be belts, I believe the idea of satellite cities is better. What use is a zone of farms in a group of garden city homes? You should have a factory strip and then a garden city strip. A zone of farms has been spoken of but people living in garden cities or suburbs can not use them. They would be fenced off. What suburban dwellers need, is parks, or possibly forests.

GEORGE H. GRAY, *New Haven*:

I would like to corroborate Mr. Ford's opinion and Mr. Comey's opinion as to the ideal of controlling zoning by rules based on functioning rather than by any arbitrary rule of thumb. Population per acre is a mere rule of thumb which we borrowed from England in its earliest days of housing reform. Looking to the

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past for guidance we plan for the future. We should plan with eyes on the future conditions and not on past conditions. Logical planning can be done only by people who are trained in planning and from them must emanate the logical limitations in order to achieve the desired standard. The general attitude in zoning seems to be that you must have one district for one-family houses, another for double houses and another for apartments. It seems to me illogical. I was very much impressed with this idea in connection with some work I have been doing lately in developing a certain tract of land. A portion was given over for single and double houses; back of these would be group houses, under one roof with separate entrances; and back of these again a group of low apartment houses, built around a formal garden. Back of these under the apartment houses and under the hillside, garages for the occupants of the property; back of that again tennis courts, playgrounds for the children, etc. Developments in high-class residential districts satisfy me that the point of view which assumes that a two-family house or an apartment house is a low grade house is erroneous. In the City of New York opposite Central Park you have some of the most beautiful multiple residences in the city. In a certain building I have in mind each apartment rents for twenty thousand (\$20,000.00) dollars a year and compared with the single family house in some suburbs the supply of air and light is extravagant. If homes get the necessary air, light and recreation space they get what is necessary. In the tract I was speaking of it looks as open as the country, and yet by actual figures shows about eight families per acre including apartment houses.

Mr. Comey spoke about flexible laws and the undesirability of laying down rigid laws. With reference to

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the undesirability of laying down rigid laws, let us take the New York tenement house laws, for instance. They are based on the assumption that in order to make the law work through the political organization which administers the city, it must be cast iron. What is the result? The result is one of the worst conditions of constricted planning that can possibly be imagined. All who are engaged in the actual planning of buildings know it should have been framed with some degree of flexibility with regard to the proportion of light and air and so on, instead of being based on rigid limitations on the sizes of the courts, etc. Contrasting with this is the zoning law which controls properties far in excess of those controlled by the tenement laws and is based on flexible rules of functioning. It accomplishes its purpose far more satisfactorily and works smoothly. It proves that a flexible law may be applied even tho the city be under the prevailing type of political control.

ANDREW W. CRAWFORD, *Philadelphia, Pa.*:

We are not seeking palatial apartments. We are seeking the type of house that the ordinary workman who is industrious may hope to own. A workman should have a stake in the community and the best form of stake is a home which he owns. The idea that you can have apartments in an apartment house which are attractive and even palatial is entirely beside the mark. The people who live even in the palatial apartments are nevertheless living in tenements. An apartment is merely a tenement house with a college education, soon forgotten when the surroundings begin to go down. People who have children and live in apartment houses are recreant in their duty to their children. In Philadelphia there were during the war

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about fifty women who did especially good work. In the whole list I do not think there was more than one who lived in an apartment house. All except that one had a house of her own to run. The "cliff-dwellers" did not show up well, apparently.

The two family house, even though of the duplex type, is a step in the wrong direction. Some unfortunately situated cities like the Borough of Manhattan of New York City require apparently lines of tenement houses but both London and Philadelphia prove that you can have enormous cities with a vast majority of single family houses.

In zoning all the elements of the town plan should be made to cooperate if possible. There has been a tendency to create zones without regard to the other elements of city planning. The only element that appears to have been seriously considered is the fundamental one of the street system, referring especially the width of the street, but the other elements of city planning should also be considered. A well designed park system can be made to aid in forming zones physically. In Philadelphia there is an example of this. The Philadelphia and Reading Railroad runs through a valley near the Falls of the Schuylkill. Slightly to the northwest of it is the southeastern end of Germantown. The Midvale Steel works occupy the valley. The ground between the Steel Works and this residential point of Germantown has been acquired for park purposes, the area being about ninety acres. Thus an effective barrier is interposed between what should obviously be zoned as an industrial section and what should obviously be zoned as a residential section.

Returning to the subject of the single family house let us forget the intensely bad example of Manhattan and stand for the single family house. In Philadel-

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phia we have about 250,000 two-story single family houses sheltering a population of about 1,250,000. This proves that it is not necessary for a city of less than one and one-quarter million in population to have even the duplex house, let alone the apartment house. You may say that in Philadelphia there ought to more space around the individual houses. I fully agree with you. We are working toward better results but we are not putting two families where one ought to grow.

MR. GRAY:

I would like to quote myself right. The point is that Mr. Crawford made the assumption, from my remarks, that I failed to appreciate the point of view of getting proper air and light and other living conditions. The very fact that the scheme in question was worked out for intelligent people who wanted more open living conditions than are possible for the same amount of money in single houses, should be sufficient reply. It is an elementary principle that you may place two houses on a lot of a given restricted size and have adequate air and light but no decent space for recreation and that you may place the same houses side by side as a two-family on the same given lot and have adequate light on three sides and adequate free space left for recreation and more privacy in living. This scheme I speak of would have about four or five acres for a real play ground, not merely a back yard.

## THE ENFORCEMENT OF A STREET PLAN

ARTHUR S. TUTTLE,

*Chief Engineer, Board of Estimate and Apportionment,  
New York City.*

The most spectacular work of the city planner relates to problems involving the provision of relief where congestion has become pronounced and, in the degree to which this is recognized, he succeeds in interesting the public.

The difficulties encountered in securing the necessary support and in actually carrying out a plan recognized as possessing the requisite commendable qualities of giving a maximum of benefit at a minimum of expense will usually depend partly upon the degree of seriousness of the existing congestion and partly upon the method of financing the improvement, the debate on the latter feature in most cases leading up to a decision as to how much of the expense is to be borne by the property in the immediate locality of the improvement.

When the plan relates to suburban areas or areas where congestion has not yet manifested itself, the planner must solve in advance all of the demonstrated problems which apply to the more congested territories, this requiring on his part vision to forecast the future needs as well as the ability to impress the forcefulness of his views upon those who may be expected to finance the improvement. Where real estate has been inactive and the meeting of tax bills a never-

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ending occasion for increasing the difference between debits and credits, the balance continuously going in the wrong direction, a proposition to impose a boulevard in place of an old narrow street with the resulting local assessments and the possibility of an increased tax, does not usually appeal to the average short-sighted owner who may here have all of his savings invested on a margin which does not leave room for additional financing and who may feel that he is thus threatened with foreclosure. Those in this class are probably the most difficult to reach in support of an adequate plan for the future development of a community but they are usually to be found to at least some extent and their active opposition must be met, while, on the other hand, it is difficult to arouse in rebuttal anything like the same degree of interest or enthusiasm on the part of others who can, at least in some measure, appreciate the merits of the proposition.

Through municipal control of the street plan, the height and use of buildings, the waterfront, and the position of surface as well as trunk line railroads, the city planner is placed in a position where it is possible for him to bring strong arguments in support of his project but he must still recognize the possibility of changes in basic conditions which may come about naturally and before they are realized, and which may undermine the theory on which his plan depends for support. Who could have forecast thirty years ago that Fifth Avenue, in New York City, would, in the section below Central Park, so speedily change its character from the abode of the New York aristocracy to the great business thoroughfare which we know it as to-day, or who would have suspected that when the roadway of this street was increased from 40 feet to 55 feet in 1909 that the congestion of traffic would be so great to-day as to make it necessary to seek other

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remedies? Who could have predicted that in twenty years property in that portion of Park Avenue north of and adjoining the New York Central Railroad Station would have become the choicest site for apartment houses in the City?

Less than two years ago a survey of the location of the various industries in the heart of New York indicated that in the territory north and west of the Pennsylvania Station, most of which was zoned only five years ago for unrestricted use, the printing and lithograph trades predominated. Within the last year, the garment workers, driven out of the belt adjoining Fifth Avenue, have invaded this area to an extent such as to require its re-zoning if the vicinity of the station is to be reserved for the shopping and business uses to which, through the recent opening up of the Seventh Avenue Extension and subway line, it is now clearly adapted.

These are but extreme illustrations to show that the character of a section or of a community cannot be rigidly fixed for all future time, nor would it be wise to do so even if it were possible, for such control would have the effect of throttling the speculative instinct and vision of the real estate developer to which, if kept within reasonable bounds, every City owes so much in what spells progress. For these reasons it is not practicable for the city planner to look indefinitely into the future, and more particularly if in so doing his plan imposes a burden of cost which may be described as bordering too highly on a speculative character.

It is not the object of this paper to deal with the special considerations which must be used in the preparation of an ideal plan, but rather with the method of dealing with the particular phase of the problem of city planning which concerns the control of the plan, to the end that it may secure the respect of

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the property owners, and that building encroachments may not destroy it by making it so costly that it cannot be carried out. Such a plan must be worked out along lines which are not only suitable to the needs, but it must be fitted into the existing conditions in such a way as to carry conviction on the part of the thoughtful that it will bring no more destruction to land or buildings than is necessary or to an extent that it not entirely justifiable.

It is not so many years ago that the policy observed in New York City for extending its street plan to and through the various small hamlets from time to time incorporated within its limits involved a rectification of the alignment of the old streets, with a rigidly uniform width and generally with little apparent regard to the relation of the selected lines to buildings or to property sub-divisions. It seems to have been assumed that in some cases the removal of the damaged buildings would be a benefit to the community on the ground that they would be replaced with better ones, and that the creation of gores would be followed by co-operation on the part of the property owners toward a re-subdivision of their holdings to the end of adapting them to the new street lines. There has also been an apparent expectation that the problems growing out of the exclusion of old roads from the recognized street plan were matters of small moment, for the correction of which conditions remedies were at hand.

Practical experience has fully demonstrated the fallacy of all of these theories, the observance of which has not only proved a source of great and unnecessary expense both to the city as a whole and to the property owners of a locality, but they have also served to raise objections to really meritorious plans on the part of residents of other localities owing to the fear of a repetition of such errors. The correction

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of these mistakes has now progressed to such a point that, with the securing of suitable legislation which will admit of closing old streets through a reasonable procedure, and incidentally provide for their recapture by private interests, a plan for which has been worked out for New York City but not yet enacted into law, it may be said that every reasonable precaution in the way of insuring a proper plan without unduly penalizing the owners of property most directly affected has been taken.

Through the close scrutiny of damage maps before opening proceedings are allowed to progress and the application of excess condemnation, it is now practicable in New York City to make such necessary readjustments in the lines of a street or in the scope of the proceeding as to insure that it may be carried out without incurring damage which could be avoided without seriously detracting from its usefulness, while a similar procedure with respect to the examination of grade maps before a surface or sewer improvement is undertaken, serves as a further protection in this direction. But notwithstanding these precautions, it is unnecessary to say that the quota of damage by reason of encroaching buildings and property going still continues and ever must continue to be the serious financial burden to be met in the effort to impose on the community a suitable street system, based on a careful study of the conditions to be considered, and more particularly so when this involves the widening of an old street.

Assuming that all of the requirements have been fulfilled and that the plan may be fully justified in so far as its adaptability to existing as well as to future needs is concerned, a still and perhaps even more serious problem yet remains to be solved as to the ways and means to be devised to in-

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sure that it is respected in carrying out improvements along its lines.

In New York City it has been proposed to withhold a permit for a new building not designed to conform with the adopted plan for the street on which it is located, thereby avoiding the creation of another encroachment to be paid for when the street is widened. This remedy is of the "big stick" variety and broke down through mandamus proceedings on the part of owners who showed that it was an unwarrantable interference with their rights. To meet this objection, legislation has been proposed under which authority would be given for the withholding of such permits for the period of one year, during which the City could avail itself of the opportunity to institute proceedings for vesting title to the street as planned, thereby accomplishing the same result through a procedure which it was believed did not unduly interfere with the rights of a land owner. This suggested legislation has so far lacked the necessary support to bring about its enactment, although it is understood that there are cities where the occupancy of privately-owned land within the lines of mapped streets is unconditionally prohibited. This would seem to be a questionable power as it would actually have the effect of what, to all intents and purposes, amounts to the taking of property without an assurance of compensation, and hypothetical cases of serious injustice to property owners can readily be imagined.

Unless title to a street is actually acquired, there is no adequate machinery available in New York City at the present time to insure that the street plan will be respected and, in the absence of title, the only curb relied upon to preserve the plan against violation is exercised by the title companies, some of which insist upon recognition of a street plan as an essential to the

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clearing of title to a building or for the loaning of money upon building operations. This practice, however, is not general and is even varied in different parts of the city by the same company.

That it cannot be relied upon is well illustrated by a case recently investigated, this relating to a street designed to have a length of about eleven miles which, partly by reason of the topography, partly because of barriers in the form of cemeteries, and partly because of a strategic position, unquestionably stands out as one which in the days to come must inevitably be called upon to carry an extremely heavy traffic, for all of which reasons it was designed to have a width of 100 feet. Through a considerable portion of its length it was intended to absorb an old road having a width of about 50 feet, one mile of which passed through what in 1905, when the street was planned, was a small hamlet, and at this time twenty-three comparatively inexpensive buildings encroached upon the proposed lines. In 1911, when an attempt was made to acquire the street, the number of encroaching buildings had increased to seventy, and in 1917 it was found that to acquire this mile of street it would be necessary to damage a total of one hundred and eleven buildings, to an amount estimated at \$460,000. The protests of the community against the assumption of this assessment has resulted in a change in the street plan and the legalization of the 50-foot width at which it is in use. To those familiar with the situation, it is perfectly evident that this street will some day have to be widened and at an even greater cost than if this were done now, but the congestion is not at hand and in the meantime there seems to be no way in which to check building operations which will probably go on at an increasing rate, and would no doubt continue to do so even if a plan were in evidence as a guide to what it desired. In

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the latter connection it might be noted that on behalf of the owners of the encroachments the plea could be set up that pending its acquisition, the City could at any time change the lines of a street and that in case such a change should leave them back of the lines finally selected they would suffer damage without being in a position to claim compensation.

One of the latest efforts to meet the practical side of the problem of securing an adequate street width for future needs and notwithstanding building encroachments has been made in the direction of laying out courtyards to include areas which could not be acquired or taken possession of at once without incurring serious expense. In built-up areas where old and narrow streets have been dedicated or otherwise acquired but where congestion is not pronounced, it is hoped that by placing such areas on the map as flanking the existing street on each side, new buildings and the reconstruction work of the future will respect the setback line, and that at some distant date when the present buildings have disappeared, the way will be open to convert the courtyard areas into street use at a comparatively small expense. This, however, under the conditions now existing and as already pointed out, is a hope on which only a regrettably slight dependence can be placed, as it must be admitted that there is no compelling power to secure respect for the privately-owned courtyard areas, and that civic pride as well as the possible help of mortgage holders are the sole reliance for bringing about the desired result.

In cases where development has not proceeded very far but where building damage is still a serious obstacle to securing the required support for a plan, it is now proposed to give a street sufficient width to meet the anticipated needs for a definite term of years, and a position such as to either clear buildings or mini-

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mize damage to them, the remaining area required for the street being designated as for courtyard purposes, and then to acquire title in fee to both street and courtyards, but subject to the condition that the latter areas may be occupied by the present owners for a definite term of years. It is hoped that by this procedure the awards for damage to buildings will be governed, at least to some extent, by the measure of the present worth of the estimated value of the encroachments at the end of the period for which their use is guaranteed to the owners. Up to date this procedure has been applied in only two instances. In one of these, it was feared that the consequential damage claims might be very large, and at the same time it was perfectly evident that it would not be many years before the buildings were removed to give way to structures more in keeping with the conditions which now obtain in the street. That this view was fully justified, has been evidenced by the actual tearing down of the buildings before the opening proceeding was completed, with the effect of entirely avoiding an award. In the other case, the proceeding has not advanced far enough to disclose the probable outcome.

A case is at hand, however, where ideal conditions exist in the shape of what is destined to be an important artery, with a considerable number of buildings scattered along its line, of which more than forty encroach upon the courtyard area as mapped. While the total value of these buildings is small in comparison with what would be expected in a more highly developed section, it is fully in keeping with the property values, and in the end the hardship or otherwise of an assessment for benefit depends upon its relation to the value of the property assessed as well as upon the activity of the real estate market.

The actual and prompt acquisition of a street, in-

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cluding where possible such flanking courtyards as may have been provided, is, in the judgment of the writer, the only safe method of insuring the enforcement of the plan, and this procedure should in all cases be observed at the earliest time practicable. Much of the hesitancy of property owners in advocating condemnation proceedings where wide streets are concerned is doubtless due to a hope on their part that by offering resistance until such time as congestion begins to be or actually is pronounced or until a more generous administration is in power, it will be possible to secure general city aid in meeting the expense. If definite rules as to the apportionment of assessments to meet the cost of acquiring arterial as well as local streets were laid down and rigidly enforced, it is more than likely that opposition on the part of those who in the end would certainly pay the bills, would be minimized, and particularly if they became impressed with the knowledge that delay would only add to the expense.

A rule of this character has been proposed by the writer and provides as follows:

"In cases where the usual procedure would result in unduly large assessments and the improvement is one involving benefit to a larger area than would be laid out under the treatment usually observed, the assessment district shall be separated into zones of which the primary area shall be deemed to be the property fronting on the improvement to a depth of 100 feet. The primary area shall be assessed for an amount represented by the value of the unimproved land necessary to secure a street having a width of 60 feet, plus 25 per cent of the actual excess over that width up to a maximum corresponding with an assessment for a street 80 feet wide; provided, however, that

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in no case shall frontage relief be given to an amount which would diminish this burden to less than the expense of acquiring a strip of unimproved land 10 feet wide. In making the determination as to the proportion of the total cost to be assessed upon the frontage, the street width shall be deemed to be mapped width plus a percentage of the average width of the undedicated land to be acquired corresponding with the ratio of the building damage to the value of the said undedicated land, and the proportion of the total cost to be so assessed upon the primary zone shall be that which the width above described as chargeable to this zone bears to the total equated width less the width of the dedicated or previously acquired area. The extent of the general relief will be determined by the amount which cannot be raised under the assumption that the assessments upon that portion of the benefit area outside of the primary area are graded along lines conforming with the usual practice."

To illustrate the application of this proposition, let us assume a case where it is proposed to acquire a street having a width of 100 feet within the lines of which an old street is in public use at a width of 50 feet. Let us further assume that the land to be taken is valued at \$500,000 and that the damage to encroaching buildings is estimated at \$200,000. It is evident that the cost of the proceeding would be identical with that which would obtain if the street was 120 feet wide and there were no encroaching buildings. Under the rule suggested, the abutting property to a depth of 100 feet, this constituting the primary area of assessment, would be required to pay for a depth of 25 feet of the addition to the old street or 36 per cent of the cost of the proceeding. The remaining expense

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would be placed on the secondary area to such an extent as its area might warrant and the balance on the city at large.

The effect of this rule has been worked out in a large number of cases and, although it has never been given official sanction, it is believed that it would bring about a fairness of treatment both to the local interests and to those of the City.

### DISCUSSION

FRANK B. WILLIAMS, *New York City*:

A most serious defect in the city planning law of this country is the lack of any method of making the principal features of the plan binding upon the land included within it. One of the main purposes of a city plan is to corrolate the public works undertaken by the city from time to time, so that, without duplication or waste, each of them may form part of a scheme adapted to the fulfillment of the needs of the next twenty-five or fifty years. Useful as a plan without binding force often is, it inevitably fails of fulfillment in many important particulars unless the observance of it is made obligatory. In so far as the city itself is concerned, there is no legal difficulty in framing a law which shall have this effect, and in a few of our states cities are authorized to adopt a plan which shall govern all future construction by the city until amended in due form; more than a majority vote of the council and a previous reference to the city planning committee or a similar authority for investigation and report being sometimes required for such amendments.

Admirable as is a provision making the city itself conform to the plan, it will not ensure the construction of the public works as planned unless the city has or can obtain at a reasonable price the land which

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these works require. The current financial demands of the modern city are so great that it can seldom purchase land in advance of present needs. Unless, therefore, some method is devised of preventing the owners of the land planned from making improvements within the lines of planned public works, the expense of acquiring the land, when the city is ready to undertake the work, will, in many cases, be prohibitive, and important features of the plan will, inevitably, be abandoned. This the history of city planning in this country only too clearly proves.

In other countries where city planning is practiced with success, the plan of streets is protected from the encroachments of the land owner, without expense to the city, under a power analogous to our police power, by providing that if at any time after the adoption of the plan the land owner places improvements in the bed of mapped streets, he shall receive no compensation for these improvements when his land is taken for the street. This system has been in operation for many years, not only in Roman Law countries, but in England and Canada, whose laws and traditions are so like our own; and has not been found to be unjust to the land owner. The street is essential to the land owner in the profitable use of his land. The only right of which the plan deprives him is the right to build in the bed of mapped streets between the time when the plan is adopted and the time when it is carried out. In the vast majority of cases this right is worthless both because if the plan is a good one it indicates where the street and the building should be for the best interests of the land owner and because if the plan is carried out seasonably the street will be built before there is an economic demand for the building.

The need of protecting planned streets from the encroachments of land owners has always been appre-

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ciated in this country, and, at various times many of our states have passed laws for that purpose. Everywhere in the United States, however, except in Pennsylvania, these laws have been held to be a taking from the land owner of a right of use in his land and, therefore, to be contrary to the provision of our constitutions that no man shall be deprived of property without just compensation.

The increased interest in city planning within recent years in this country has revived and strengthened the demand for some method of establishing the street plan on a secure basis, as is done abroad; and many suggestions have been made for the accomplishment of this result in a constitutional manner. It has been suggested that the city, when the plan is adopted, purchase or condemn an easement or option in the land, to acquire it, when needed, at its unimproved value; but the expense of the purchase of this right, with the proceedings to acquire it, added to the expense of taking the land, later on, would unquestionably make the land cost the city too much. It has been suggested that the land owner, intending to improve land in the bed of mapped streets, should be required to give the city six months notice, within which to acquire the land; but this instead of protecting the city would furnish the land owner altogether too easy a method of forcing the city to buy his land at his pleasure instead of at the pleasure of the city. It has been suggested that an amendment to our state constitutions be urged giving cities the right to adopt plans binding land owners, as in Pennsylvania. At best, such amendments could be passed only after a long struggle; and it is to be feared that they would be held by the Supreme Court of the United States (which has not as yet passed on the question) to be contrary to the Federal constitution. It is true that with proper city

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planning a good plan will be made for undeveloped territory and will be carried out seasonably; but in this country the probability of good administration is not regarded as a sufficient safeguard against injustice in exceptional cases, as it is abroad. And there are many cases, especially in portions of the city already more or less built up, where injustice might be done. Take the case of a lot, all or an undue portion of which lies in the bed of a future street. The owner has nothing to gain by the street; and if, as often happens, its construction is delayed beyond the time when the lot might with profit be built up, the owner for many years must pay taxes on the lot, but cannot get any return on it. Again, suppose a deep lot on an existing street with a factory on the front portion of the lot; and a proposed street planned to occupy its rear portion. The entire lot would hold with advantage perhaps two additional factory buildings. If the owner wishes to construct one such building, he can put it in the middle of the lot, and there is no loss to him in depriving him of the use of the bed of the mapped street; but if, in course of time, he needs a third building, the only land for it is the land to be used for the future street; and it is unjust to deprive him of the only use he can make of that land for many years. It is no answer to his claim of damage that when the rear street is built his land will be benefitted, for under proper laws he must pay for that benefit when it comes. And the city may change its mind and never build the street; in spite of the fact that for years it has kept it on the map.

A method of making a city plan of streets and perhaps a few other features binding upon property owners which, it is submitted, would be just to them and valid under our constitutions was suggested by the author at the last session of the National Confer-

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ence on City Planning. It was, at that time, discussed by Edward M. Bassett, Esq., who suggested the advantages, in this connection, of a board of appeal. The paper is here given, with the changes suggested by that discussion, in the hope that it may lead to a solution of this most important and difficult problem.

It is suggested that municipalities shall be authorized by state law to adopt plans binding upon them until amended in due form. If a land owner desires to locate an improvement in the bed of a mapped street or within mapped building lines (or perhaps on land destined, by the plan, for a small park or play ground or the site of a public building) he shall apply, in the building permit, for permission to locate an improvement contrary to the provisions of the city plan; and when, ultimately, the land is condemned he shall recover no damages for the improvement if it is so located without permission. The city through its building department or other authority shall grant this permission only when its refusal will unavoidably do the land owner substantial economic injury and in this connection shall take into consideration the possible uses of other land in the neighborhood belonging to the same owner and the possibility, in whole or in part, of changing the improvement or its location.

From the decision of the building department refusing permission to locate contrary to the city plan, there shall be an appeal to a board of appeals, who shall have the power to grant the permission with conditions calculated to lessen or altogether to avoid the expense to the city due to improvements when, later, the city condemns the land; no appeal to the courts being allowed until after resort to the board of appeals. This provision would mitigate most if not all the hardship which the law might otherwise cause the land owner in special cases and make the law less

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vulnerable before the courts. In both these respects a board of appeals would in this connection render a service analogous to that which it has so admirably performed under zoning laws.

Illustrations of the service which a board of appeals could render in the administration of this provision of the planning law are numerous and varied; and of these illustrations I will cite three.

If a land owner desires to erect a brick structure in the bed of a mapped street, the board of appeals could offer to authorize a wooden building, pointing out that such a building could be amortised in a given number of years, with a fair return to the land owner on the value of his land. No court would hold that (in the absence of other complications) the land owner was rightly aggrieved to whom such an offer was made, even if he could obtain a larger amount by violating the city plan, contrary to the general interest; for if the return is a fair one he is not unjustly deprived of his property.

If a building were proposed a part of which only would project into the future street, the board of appeals could offer to consent to a building of which the projecting portion was only one story high; backing up the proposal by plans showing the suitability and yield of such a building in such location.

If the city intended to build the street within, perhaps, five years, the board could be authorized, with the consent of some proper city authority, to agree with the land owner that the city would build it within that time. This agreement would usually make it certain that the location of the building with relation to the future street, so soon to be built, was the most profitable one, especially if the building was to be an expensive one.

A provision making a few of the essential features

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of the city plan binding upon the land planned is essential to the success of city planning in this country. The provision here suggested would seem to accomplish everything which is secured by the provisions for the same purpose of foreign laws, by methods already familiar in this country, and therefore more likely to win the approval not only of city planners but of our courts.

ANDREW WRIGHT CRAWFORD, *Philadelphia.*

In Pennsylvania our street authorities, the Bureau of Surveys in Philadelphia and the Engineering Departments of other cities, have authority to plot streets, parks and parkways and place them on the city plan after due notice to property owners, and then if anyone builds in the line of that plotted street, park or parkway, he gets not one cent of damages when the property is opened for such buildings. That is the positive law of Pennsylvania. It has been attacked time and again and upheld time and again.

How will you get this power in other states? I believe it can best be done by a constitutional amendment. You may say "What is the effect of such proceedings on the property owner?" In theory I agree he is damaged because he has been deprived of the right to build on his own property even though such building is in the line of a plotted street; in practice, however, he is benefitted by the location and construction of the street.

As a matter of fact property owners are in theory damaged under zoning laws. If I have an inherent right, and the assumption is that I have, to build thirty or forty stores on a plot of ground two hundred by two hundred feet, as in New York City, and you come to me and say, "You cannot build over all of that lot; you must leave seventy per cent unoccupied, as you do in

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the "E" zone in New York City, and instead of building thirty or forty stories, you can build only three stories, you have taken an absolutely substantial right guaranteed by the common law away from me. And yet the Supreme Court of the United States says that this is legal, because they have upheld the zoning law in New York City. We are doing far more serious damage under police power zoning than we do in Pennsylvania, in street plotting. I believe that a power similar to that we have in Pennsylvania is far more vital to city planning than any other, and that it should be secured in every state by constitutional amendment.

B. A. HALDEMAN, *Harrisburg, Pa.*

Notwithstanding my admiration for the legal acumen of my friend, Mr. Williams, I feel that his suggestion is in the first place unwieldy and in the second place that it opens the way to increase litigation and the cost of doing these things over the cost of proceedings at the present time. As Mr. Crawford says, the Pennsylvania law has been questioned several times and has always been sustained. There are practically 100 illustrations in the city of Philadelphia alone which show the application of this law in cases identical with those referred to by Mr. Tuttle, all of them street widening cases and all showing how vital in city planning is this power to plot streets and have them stick.

As to the hardship which may result to the land owner from enforcing the street plan, I believe that no city plan has ever been established which was so iron-clad that it would not be altered if the property owner made out a good case. This is done in Pennsylvania after petition to the Board of Surveyors and a report by them. If they report favorably to the property owners, an ordinance is introduced into council and the change made.

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I believe that there is a good chance under present conditions of getting a decision from the Supreme Court of other states sustaining the use of a plan similar to the Pennsylvania plan for street lay out. You must appreciate that we are getting favorable decisions in most radical things in zoning that could not possibly have been gotten twenty-five years ago. Public benefit is considered in this age to a much greater extent even by the Courts. Is not the proper location of a street and its subsequent construction a greater public benefit than a zoning regulation? That is, does it not contribute more to the public welfare than many of our zoning restrictions which have been upheld. I can point to miles of streets in Philadelphia where new lines have been established and widenings have been made, all of which have not cost the city a single cent.

I should like to present to you the language of the Pennsylvania law. "Damages cannot be assessed for improvements made within the lines of a located but unopened street after approval of the plans of which the street in question is a part; neither does the mere laying out of a street upon a city plan, without any action taken in reference to its opening constitute such taking or injury as gives the Court the power to assess damages therefor." "No person shall hereafter be entitled to recover any damages for any buildings or improvements of any kind which shall or may be placed or constructed upon or within the lines of any located street or alley, after the same shall have been located or ordained by councils." It is this language which was passed upon in the case of *Bush vs. McKeesport* as follows: "If the question, intended to be raised by appellants, were an open one, much might be said on both sides, but we think the underlying principle has been too long and firmly settled in this State, adversely to plaintiffs' contention, to justify us in holding that

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any new principle was introduced, or changed in the law effected, by the clause above quoted."

HARLAND BARTHOLOMEW, *St. Louis.*

Even if we cannot secure the legislation which Pennsylvania now has, the way is not barred to enforce a street plan. What we are really concerned with in the street plan is the proper location and width of our major streets. The major street plan in St. Louis was prepared in 1916 and since then has been closely adhered to in all street dedications and improvement work. Of the approximately 235 miles of major streets, or one quarter of the city's total street mileage of 940 miles, it has been estimated that 69 miles are of inadequate width and that approximately 17 miles are yet to be dedicated. The present state of progress toward the completion of this ultimate plan is:

Widening under construction or completed	5.18 miles
Widening under ordinance .....	17.31 miles
Widening remaining to be approved and undertaken .....	46.51 miles
Extensions under consideration or planned	.41 miles
Extensions under ordinance.....	5.81 miles
Extensions remaining to be approved and undertaken .....	10.78 miles

The enforcement of this street plan has been largely by the adoption of ordinances under the power of eminent domain although in many cases in new land sub-division we have secured the dedication of the land. For the further enforcement of the plan, we have secured two state laws:

- (1) Prohibiting the laying out of land sub-division without approval by the city.
  - (2) Permitting the establishment of building lines.
- In connection with some of the streets already under ordinance, we have adopted a plan half way between

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immediate condemnation and the establishment of a building line. It may be illustrated by our procedure in widening North Twelfth Street. This widening affected built-up property for a distance of five miles. Twelfth Street for several blocks down town is one hundred and fifty feet wide and it narrows beyond Washington Avenue to eighty feet and is flanked on either side by a high building of very substantial construction. We mean to secure for North Twelfth Street a width of one hundred feet. Because of the buildings referred to, the cost of securing 20 feet would be very high, so instead of doing that we are merely securing an easement on the ground floor. The owners of the buildings have the right to use the structures for forty years. It is not likely that the city will have any need for the land other than for a side walk so that the giving of this right to the owners of the building is not an inconvenience to the city. If, however, the building is destroyed, it must when rebuilt be set back ten feet to the new line.

In the case of Lindell Avenue, we made a widening which involved the taking of buildings throughout the entire length of two blocks. We condemned the land and the buildings but gave back to the owners the right to occupy the buildings for ten years. Our assumption in giving back this right was that most of the buildings, which are old, would have outlived their usefulness and we would be paying merely for the land. Unfortunately this plan did not work out, because the owners confessed that it would be bad business to wait for ten years, and asked for an ordinance authorizing the widening at once.

There are many instances where the use of persuasion is most effective. In widening Washington Avenue, after the report of the commission was filed, three owners out of several hundreds objected to the find-

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ings. The objections of anyone owner under the law holds up the whole proceedings. In a large program like the Washington Street widening objections produce endless court difficulties. In this particular case a committee from the Chamber of Commerce called upon these three property owners and persuaded them to withdraw their objections.

Another illustration taken from the North Twelfth Street widening. The General Motors Company has located a plant involving an investment of from five to seven millions on this street near the city limits in a section which is practically unoccupied with buildings. The plans for the building called for its erection on the line of the old sixty foot location. We want a hundred feet for the new street, but under Missouri law (and the Pennsylvania law does not differ in this respect,) it takes a good deal of time to get an ordinance enacted. We were able however to persuade the General Motors Company to hold up their work, and set the building back to our proposed line. It cost the Motors Company at least forty thousand to revise their plan, and saved the city half a million dollars. As a result of this example of public spirit, we secured an organization of property owners along North Twelfth Street for a mile and a quarter to a mile and a half, and worked out a plan of voluntary dedications. The property needed for the widening could not all be taken equally from the owners; it varied from a dedication of a strip forty foot wide down. We listed the owners, pro rated the cost of land and gave it a square foot value. There were practically no buildings to be taken. If a man gave twenty feet, he broke even; if he gave more than twenty feet, he was paid for the excess over twenty feet; if he gave less than twenty feet, he had to pay the difference between what he gave and twenty feet. On the day set, every owner showed up with his

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check, and checks were given to those to whom something was due. In less than two months we had the entire widening of the street for a distance of one and one quarter miles. An ordinance for the improvement of the street has already been passed and all of this has been done in less than six months where it would have taken two or three years by condemnation.

The widening of Olive Street presented great difficulties because it involved a taking of forty feet on one side for a distance of two miles through a built-up district and a district which was blighted and difficult to rehabilitate. The owners of property affected formed an organization and our office estimated the individual damages to each piece of property and the individual benefits as a result of the improvement and the total amount of cost to be paid by the city. We then got an agreement from the Board of Estimate that the city would pay the share allotted to it, and secured the signatures of more than a majority of the property owners approving of our estimate of damages and benefits. We believe that the assessment committee when appointed will follow our plan.

One of the most important essentials in establishing a street plan is to have a proper procedure for financing it. Under the Missouri law, three commissioners are appointed in street widening and extension cases, all political appointees. To-day for instance, we have something like sixty different street projects on the way, sixty different committees with no relation to each other and no adequate records of their conclusions. This procedure is not apt to produce the best results either in the assessment of damages or estimate of benefits. Realizing the need for a definite policy our office has employed with the acquiescence and hearty co-operation of the municipal administration, a man to give his entire time to the devising of a method

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of assessing damages and estimating benefits. As a result of his work we have adopted a policy for all street projects and our office representative works with the official assessment commission.

CHARLES H. CHENEY, *Portland, Oregon.*

In Portland, Oregon we have 1500 miles of streets although the city is only one third of the size of St. Louis or Cleveland. Most of the streets are sixty feet wide and the major street problem will involve much street widening for which the bill will be high. We propose to have for main traffic streets the width of eighty feet as a minimum, for great arteries one hundred feet, and for water front industrial streets one hundred and twenty feet. At the outset of our street planning program we were met with the argument that any street program involving such great changes would require an outlay of millions of dollars. In order to disarm criticism we induced the Mayor to issue a proclamation calling on the civic organizations and the people of the city to make 1921 a year of gifts to Portland. Within six weeks we had one hundred and fifty dedications amounting to twenty-seven thousand lineal feet of new boulevard, parkways and traffic streets none less than one hundred feet wide, most of them one hundred and fifty feet and some of them two hundred feet wide. These dedications were made because the property owners believed it to be good business. We expect to have twenty-five or thirty miles of new traffic streets and boulevards before the end of 1921. The important thing is that by getting these gifts, we are nailing down every important traffic street and boulevard and in future years it will be the natural thing to fill in the missing links. This we will have to do because of small owners who cannot afford dedication.

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Oregon has legislation giving the city jurisdiction over plats for six miles outside the city limits. We have had great success in persuading sub-dividers to give land enough so that our main highways into the city from the outside districts will have a minimum width of eighty feet.

## RIVER TRANSPORTATION IN CITY PLANNING

J. FRANKLIN BELL

*Major U. S. Engineering Corps*

*Pittsburgh*

All great cities are situated on navigable waters. Pittsburgh was founded at the junction of the Three Rivers, at the Forks of the Ohio. To those three rivers she owes her birth, her early development as a commercial town, and her growth and power today as an industrial city of immense wealth. The things that Pittsburgh has done speak for themselves. We are here to consider the things that have been left undone. To omit from our City planning, full consideration of our river transportation problems would be a serious error.

During the past 22 years I have been stationed at various places and usually engaged on work connected with water transportation. I will describe briefly some of the things being done at other places before making suggestions as to what ought to be done at Pittsburgh.

Last year I was stationed at New Orleans. The general government constructs the main line of levees along the Mississippi River, one-third of the expense being borne by the various Levee Districts, which Districts have also the whole expense of maintenance after the levees have been brought to the prescribed grade and section. The general government maintains also the channel depths in the Mississippi and through

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the passes at the mouth and also protects the banks at certain points where caving would cause general financial loss. The Board of Commissioners for the Port of New Orleans, a state organization, has constructed 5 1-2 miles of wharves. In general these are pile supported wooden decks, extending out in the river a sufficient distance to have about 25 feet of water along their front. The rear portions are covered by large storehouses into which spur railroad tracks extend and trucks can be driven to all parts of the storehouses. In general, cargoes are handled by the ships' tackle, but special mechanical provision is made for handling grain, bananas and coal. The Board of Port Commissioners have full control and regulate towage charges, wharfage dues, anchorage of vessels, coal and water charges, allotment of wharfage front either temporarily or semi-permanently, etc. In spite of the fact that 5 1-2 miles of front have already been provided, arrangements are being made to add additional wharves, as the demand for space has been growing faster than its supply. In spite of the difficulties due to unstable banks, a water level varying 20 feet in elevation, and the menace of a river which sometimes threatens the structures by scour and then may soon deposit several feet of silt at the same or neighboring points, requiring constant watchfulness and almost continual dredging, the project has been an immense success.

In addition to the expenditures for works on the river, eighteen millions of dollars are being spent to provide an Inner Harbor, separated from the river by locks, and connected by a short canal with Lake Pontchartrain. The object in constructing this inner harbor is to provide a harbor with a constant water level and to bring about the industrial development of a part of the city otherwise of little value.

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We are somewhat inclined here in the north, to look on the people of our Gulf Coast as being somewhat behind us in progress and energy. But when one compares the wealth of the Pittsburgh District with that of Louisiana and then compares the magnitude of the works which they have undertaken successfully with the lack of municipal works of a like nature in the Pittsburgh District, one can but admire the vision and energy and courage of the Board of Commissioners of the Port of New Orleans. It is conceded by those in a position to know that New Orleans has one of the brightest futures commercially of any city in the United States.

She has been helped some by the general government but to an astonishing degree she is helping herself. Consider that for a considerable portion of the year the waters of the Mississippi are higher than the ground in any part of the city, that all drainage and sewage must be gotten rid of by pumping, that much of the surrounding land is low and swampy, that there are practically no coal, rock, clay, gravel and sand deposits such as we have here, and our admiration for their confidence and vision must be increased.

When in France, I had an opportunity to take a trip down the Seine with some French Engineers. Nothing is left undone to utilize to the full the navigation possibilities of that small river. Although the war had just ceased, the river was full of barges, well painted and in excellent condition. Terminal facilities and transfer points were numerous and well kept up.

Navigation on the Meuse and the Moselle and the connecting canals had been destroyed as they were in the battle areas, but the Rhine was a busy commercial river.

Little is to be derived by comparison with terminal works studied at Jacksonville, Fla., Manila, and the

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Panama Canal Zone as conditions there are very different from what they are here.

Just before the War, however, I was stationed at Albany, N. Y. and had an opportunity to see something of the work on the upper Hudson River, and on the Erie and Champlain Canals. New York State had spent over \$300,000,000 on her canals. It isn't the time or place here to enter into a discussion of whether or not this expenditure was justified or whether the plans were wisely executed.

We can learn something, however, from the type of terminals constructed.

In general, there was a concrete wall of sufficient length to accommodate several barges being loaded or unloaded at the same time. Unloading cranes and storage were provided. Railroad and highway connection with the terminals completed the essentials.

The Upper Hudson is a busy river in the summer-time. The canals are closed on account of ice from about Dec. 15 to May 15 each year and this is a very serious matter. Passenger traffic on the upper Hudson is large, running up to nearly a million passengers per year. Package shipments are large. The total tonnage, however, is far below that carried on the Monongahela, because of the heavy shipment of coal, steel products, sand, gravel, etc., on the latter river. One tow of coal on the Monongahela will sometimes exceed 6,000 tons. Twenty-four million tons of freight were carried on the Monongahela in 1920. Assume the saving in transportation costs at 50 cts. per ton, which is believed to be conservative and we have a saving of \$12,000,000. Add the advantage of being able to keep the great industrial works running to full capacity when we had a scarcity of coal cars, especially during the war period. Consider also the increase in property values, especially of industrial sites along the rivers

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and credit that increase to them. Consider also the advantage to the Pittsburgh District of having reservoirs of water near at hand from which to draw for municipal and industrial works during periods of low water and the better sanitary conditions that exist through having our sewage discharged into these reservoirs rather than into an almost dry river bed in the summertime, and one begins to get a better conception of the value of these rivers to the Pittsburgh District.

A railroad without terminal stations, warehouses, yards, spur tracks into industrial works, sidings, etc., is of little value. Any company that built a railroad and failed to provide the above facilities would go broke.

A navigable river without terminal facilities and rail and highway connections is in the same condition as a railroad without any. The national government improves our rivers but does not enter into the provision of terminal facilities. On the Monongahela, the large corporations have supplied their own and have grown rich as a consequence.

Soon the Ohio River will be improved throughout its whole length. If the cities along her course wish to profit fully from that fact, they must imitate the example of New Orleans and provide terminal facilities which as yet do not exist.

There should, in general, be no more antagonism between railroads and rivers than there is between railroads and highways. There is a place in our transportation problems for all three. If highways are improved, the railways have more passengers and freight to carry. If rivers are improved, the country develops and the railways have more business. If it had not been for the rivers, there would never have been any Pittsburgh industrial region and we would have needed no railways.

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The mere existence of good river terminals at Pittsburgh will add enough to the wealth of the city to pay for them. Their construction will aid in the development of the whole Ohio Valley and every railroad will benefit thereby. Wealth is a variable quantity. Because wealth increases in one place, it does not follow that it must be drawn from another.

What is needed is perfectly evident:

1. Substantial wharves at which boats can lie.
2. Unloading, loading, and transfer devices for handling cargo.
3. Storehouses properly designed for the commodities to be stored.
4. Good railroad connections.
5. Good highway connections.
6. Construction and administration under a body of ability, courage and vision.

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### DISCUSSION

#### RIVER FRONT IMPROVEMENT AND FLOOD PROTECTION— KENNETH C. GRANT, *Dayton, Ohio*:

The two parts of this subject naturally are closely connected. You rarely carry out one without finding it desirable or necessary to devote some attention to the other. The regulation of the river channel through a city, and the construction of levees and flood walls, usually makes available lands for parking and boulevard purposes, or for wharves and river terminal facilities, if the river is navigable. The notable project for flood protection in the Miami Valley, Ohio, includes the improvement of the river channel through a number of cities and towns; and much attention has been paid to the opportunities thus afforded for improving the river front by parks, particularly in the city of Dayton.

The City of Pittsburgh has many miles of waterfront, along three navigable rivers, carrying a very large waterborne tonnage. The problem of flood protection is a pressing one, and has received much study, although no actual construction has as yet been carried out. The facilities for handling the water traffic, except at certain privately owned plants, are very primitive. When flood protection works are built there will be an opportunity, and it is the intention, to construct public river terminals that will greatly improve the appearance of the waterfront, and provide modern facilities for handling freight carried on the rivers.

Note. Lantern slides were shown by the speaker to illustrate the work of channel improvement now being carried out in the Miami Valley, Ohio, including levees, flood walls, and dredging of the channel. Other views contrasted the appearance and use made of the Pittsburgh waterfront with the improvements at river cities in a number of European Countries. Views taken before and after these improvements brought out how much can be accomplished in this way.

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### ACCOMPLISHMENTS IN VARIOUS CITIES

#### NEW YORK CITY—*Nelson P. Lewis*

Although they are not physical accomplishments, two events in New York City during the last year show the importance of planning for larger units than the city. One is the treaty between the state of New York and the state of New Jersey, under which it is proposed to place under one Board, the entire port of New York instead of the several boards which now have jurisdiction. The other is a plan to work out a metropolitan highway system with the co-operation of the various municipalities and county authorities in the great metropolitan area which embraces all the boroughs of New York, Westchester County, the New Jersey Shore and even extends into Connecticut. I expect to spend much of my time during the next year assisting in effecting such a plan.

#### OHIO STATE CONFERENCE—*Miss Charlotte Rumbold.*

In its first year this organization of planning boards and other civic bodies interested in city planning secured a state law on zoning for the chartered cities, towns and villages of Ohio. This year our legislative program includes amendments to the platting laws which will prohibit selling lots by metes and bounds and will require all sub-divisions to be approved before recorded, and a constitutional amendment to permit municipalities to assess the cost of improvements on the property benefited. The constitution at present requires municipalities to pay 50% of such costs. Next year we will attempt a codification of the planning laws of the state.

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THE MASSACHUSETTS FEDERATION OF  
PLANNING BOARDS—*Alfred B. Williams.*

This federation consists of about forty planning boards. It has been most active in its legislative program and has secured during the 1920 session of the Legislature, a zoning law permitting any city and town in Massachusetts to adopt a zoning ordinance, and a set of bill-board regulations which, if effectively administered will greatly reduce the bill-board nuisance. It has also induced the State Department of Public Welfare to create a Division of Housing and Town Planning.

PENNSYLVANIA BUREAU OF  
MUNICIPAL AFFAIRS—*Karl B. Lohman*

Two years ago the Legislature created in the Department of Internal Affairs, a Bureau of Municipal Affairs. This was to help the municipalities of Pennsylvania in their town planning and zoning. Our work is to organize as many municipalities in the Commonwealth as possible. We meet and advise with city and county officials and citizens organizations. We have helped to organize the majority of the twenty-six city planning commissions in the thirty-five third-class cities of Pennsylvania. Our office is a clearing house of information on all phases of city planning throughout the state.

BROCKTON, MASSACHUSETTS—*Willard S. Jackson.*

Brockton was the first city in Massachusetts to adopt the zoning ordinance under the state law passed in 1920. After passage of the act, a good deal of stir and opposition was made by certain elements in the city but the Chamber of Commerce backed the city planning commission in its efforts to give the zoning ordinance

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a complete trial. The city planning commission is also working out a major street plan.

GRAND RAPIDS, MICHIGAN—*Hugh E. Lynch.*

Grand Rapids is co-operating with the other cities of the state to secure a zoning act from the Legislature of 1921. I understand that the act has now passed both houses of the Legislature. The chief effort of the Planning Commission during the last year has been a publicity campaign which has had the excellent result of getting an appropriation from the city commission which will be sufficient to start work on the city plan.

GREEN BAY, WISCONSIN	}	<i>John Nolen</i>
SCHENECTADY, NEW YORK		
BRISTOL, CONNECTICUT		
COHASSET, MASSACHUSETTS		

Green Bay has prepared through the agency of its city planning commission, and at the cost of the city, a comprehensive plan and although the plan has not yet been published, the city has already started on the execution of some of the recommendations including the acquisition of land for some of the parks.

Schenectady illustrates the value of a city plan even though it is not immediately carried out. It has just finished a new viaduct which was included in the recommendations of the city plan prepared five or six years ago.

Bristol, Connecticut has acquired the site for the high school and has completed the plan for a boulevard to relieve congestion in the center of the city. Both of these items were recommendations in the city plan.

Cohasset, a community of less than 5,000 permanent population, raised \$100,000 by private subscriptions and carried out four projects which were among the

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recommendations in its city plan including a Town Common, a community bath-house, the acquisition of Sandy Beach, which is the best bathing beach in the locality, and the clearing away of unsightly stables in the railroad section of the town.

### TEXTILE VILLAGES IN THE SOUTHEASTERN PART OF THE UNITED STATES—*E. S. Draper.*

The conditions which existed ten years ago in these villages would have been considered alarming if presented at a City Planning Conference. To-day in fully 90% of these villages and there are one thousand of them in the South, improvements to a radical extent have been installed, sewers, water systems, lighting systems and modern sanitary improvements that are not excelled by textile communities in any section of the country or for that matter by communities in any other industry. Of the new developments carried out in textile communities 90% are planned from the start.

### PORTLAND, OREGON—*Charles H. Cheney.*

The comprehensive zoning ordinance which passed the city council on March 20, 1920 was submitted (under conditions prevailing in the West) to a referendum vote and was defeated by a few votes out of 60,000. We shall try again and in the meantime, the city is protected fairly well by a building code.

The problem of the Union Station development and the unification of terminals has been one of the most important to come before the city. The railroads have asked for a location which will affect parts of forty streets and the Council has agreed to grant this location provided the railroads dedicate land for a marginal street plan surrounding the railroad location.

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The Planning Commission has completed the blue prints during the past year for the major traffic street plan and the boulevard and park plan. The street plan has been adopted by the Planning Commission and the park and boulevard plan by the Park Board.

### PHILADELPHIA MAIN LINE DISTRICT—*Arthur C. Comey*

A path-finding or quick survey was completed for the Philadelphia main line district last year and recommendations made for the main features of a city plan. At the same time a complete building code was worked out for Lower Merion township which in my opinion, is one of the best in the country because it gives under one cover all the legal requirements for building with explanatory notes interpreting the law. Like every other metropolitan area, the great difficulty in this district comes from the many municipal authorities with jurisdiction over parts of the same area involved in the plan.

### INDIANA—*Alexander W. McKeand.*

Indiana is very new in city planning since our law which covers both city planning and zoning will not be effective until early in June of this year. However several cities in the state have done much preliminary work and in my own city of Terre Haute we are completing our surveys for a park and boulevard system.

### SPRINGFIELD, MASS.—*George C. Gardner.*

Our City Planning Board is only five weeks old but we have an appropriation from the city government which should bring results.

The ordinance under which we are created makes it mandatory on the Planning Board to advise the various other Boards in the city when this advice is asked.

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Thus far we have been asked by the School Board to pass upon the site for an athletic field and stadium and we have reported adversely. We have been asked by the Park Department as to the location of the boulevards around the city and we have tentatively approved their plan. We propose as soon as possible to begin the preparation of a comprehensive city plan, in order that our advice to the various boards of the city may be in accordance with it.

PITTSBURGH—*Charles M. Reppert.*

The bond issue passed in 1919 provided \$22,000,000,-00 to carry out many features of the city plan. There are several projects under way, notably the widening of Second Avenue in the down town district from forty to eighty feet. This street passes through a built-up business district and requires the tearing down of many structures and the moving and re-building of others. It is an outstanding example of city re-planning. To connect with Second Avenue, we are constructing a boulevard called the Boulevard of the Allies extending up the Monongahela side of the city. This represents hill side construction under conditions much like those of Bigelow Boulevard, which is the main thoroughfare out of the city to the east. On the north side of the city, we are constructing an improved highway to connect down town Pittsburgh with boroughs that lie beyond the city limits on the northerly side of the Allegheny River. Here we are widening a very narrow street occupied by two car tracks with a hill on one side and the railroad on the other. We are digging into the hillside, moving buildings, constructing extensive retaining walls and maintaining traffic at the same time.

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G. H. HERROLD, *St. Paul Minn.*:

The City Planning Board has completed a Preliminary Plan of the city but before asking the city council to adopt the plan will complete the Zoning Survey that they may be sure that the street plan and the zones are correlated. There are two street projects underway both presented to the City Council by the City Planning Board. One is the University Avenue-Robert Street Connection,—University Avenue being the main arterial street through the city to the State University and Robert Street the main retail street. Their alignments are obtuse but they intersect at right angles and are connected with a 11% grade. This project will eliminate the bad grade and connect the two streets with an easy curve, making a continuous artery through St. Paul to South Street at a cost of \$255,000. The other project is the widening of Third Street from 57 ft. to 90 ft. This is a street marginal to the retail district and will make an excellent thoroughfare for the distribution of traffic and the approach to the new Union Station. The estimated cost for the acquirement of land and buildings for this widening is \$1,340,000.

The State Legislature just adjourned passed an enabling act authorizing zoning under the police power in St. Paul, Minneapolis and Duluth (Chap. 217 Session Laws of 1921) and also authorizing these cities to acquire or prepare and adopt a comprehensive city plan. Further legislation (Chap. 21 Session Laws 1921) authorizes the same cities to acquire property for roads, boulevards, parkways and parks by purchase or condemnation outside the city limits and carry out the necessary construction work for their improvement.

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CINCINNATI, OHIO—*C. H. Meeds.*

The planning commission during the last year has passed upon many plans of sub-divisions both within the city limits and for three miles outside. They are greatly assisted in this work by a topographical map of the entire city, one of the best of any city in the country. The Park Department of Cincinnati has started a municipal forest in which already there are 1100 acres of forest, 250 of which are original forest and the balance re-forested.

CLEVELAND—*Robert H. Whitten.*

The Cleveland Auditorium built at an expense of \$5,000,000.00, will be completed within a few months. This is one of the most important buildings in the Cleveland Civic Center toward the completion of which Cleveland has been working for some twenty years. It may take twenty years more, but when completed will furnish one of the best illustrations in America of the advantage of planning for the grouping of public buildings and adhering consistently to the plan through a long period of years.

Two local group plans designed to establish neighborhood centers have been prepared during the last year.

A tentative zoning plan will be ready for submission to the council within the present calendar year. A series of public hearings have been held on the Lakewood Zoning Ordinance. Cleveland Heights has appointed a city plan and zoning commission and its zoning plans are about ready for submission to the council. In East Cleveland, a zoning ordinance has been sustained in the lower court and an appeal refused on a technicality. The case involved the right to establish apartment house districts.

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During the past year, the city plan commission has established a tentative thoroughfare plan and the city now is purchasing the property for the extension of Chester Avenue and Carnegie Avenue. Building line legislation is under way which will facilitate future widenings. The biggest city planning accomplishment during the past year has been the approval by an overwhelming vote of a tenth of a mill tax levy for the acquisition and improvement of park lands by the Cleveland Metropolitan Park Board. This will start the development of a comprehensive outer park and parkway system. It is proposed to acquire 20,000 acres of park land.

ST. LOUIS—*Harland Bartholomew.*

*Legislative Program:* The following acts were passed at the last session of Missouri Legislature. An act to permit the control by cities of land sub-division in cities of over 500,000 population; an act to establish the procedure for fixing building lines on streets; an act to authorize zoning ordinances in cities and towns of less than 50,000.

*Major Street Plans:* The following are some of the important projects as incorporated in the major street plan of St. Louis which have either been completed or initiated by the passage of ordinances. The widening of Washington Avenue between Theresa Avenue and Jefferson Avenue was completed; a link in the Kingshighway was completed for a distance of 6,777 feet at a cost of \$163,893.00. This is a 150 foot roadway with a 50 foot parkway in the center and 27 foot streets on each side. Ordinances were passed for the opening and widening of another link in Kingshighway, a distance of 23,057 feet; the widening of Morgan Street from 60 to 80 feet, a distance of 5,241 feet; the

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opening and widening of another section of Morgan Street from 50 to 80 feet, a distance of 3,111 feet; the widening of Franklin Avenue from 50 to 80 feet, a distance of 1,821 feet; the widening of Easton Avenue from 60 to 80 feet, a distance of 6,083 feet; opening and widening of Hampton-Billon route from 60 to 80 feet, a distance of 23,440 feet; widening of Vandeventer Avenue from 60 to 80 feet, a distance of 2,202 feet; establishing a cut-off at several street intersections.

*Zoning*: Application for changes in the zoning ordinances have been about the same in number as compared with previous years although there is noted a slight reduction in requests for the latter part of this period. The city planning office by reason of its familiarity with the zoning ordinance and various improvements proposed in the city plan has been instrumental in selecting numerous sites for public and semi-public buildings and several petitioners for changes in the zoning ordinance have been directed to more suitable locations and have dropped their petitions.

WICHITA, KANSAS—*Harrie S. Mueller.*

The Kansas Legislature passed a city planning law which became effective March 1921 and a zoning law which will become effective in June or July 1921. Pursuant to the city planning law, the city planning commission of Wichita was appointed April 8, 1921 and is now preparing a major street plan under the direction of Harland Bartholomew.

LOS ANGELES—*G. G. Whitnall.*

The planning commission has been in active existence since August 1920 and has emphasized the preparation of a major street plan. Of the 3,000 miles of streets, 300 have been classified as units of the major

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street system. Several opening, widening and connecting projects have been begun. The legislative program consists of securing the passage of acts which will assist in the financing of street work and the submission to the electors at the next election of a constitutional amendment on excess condemnation. The past legislation on zoning consists of 100 ordinances. These are to be replaced by a single comprehensive ordinance which is now ready. Actual zoning work is done in the city for approximately 45 square miles. The commission passed upon over 100 plans for sub-divisions.

Of particular importance is the fact of our getting city planning into the curriculum of all the high schools and the University of California and the University of Southern California.

### TORRINGTON, CONNECTICUT—*C. A. Paterson.*

Torrington has adopted a new building code in which there are important city planning features and has carried out one feature of its city plan by widening the approach to the railroad station from the City Hall building.

MILWAUKEE—Its zoning ordinance was adopted on November 15, 1920, the third large city in the United States to be zoned.

### FLINT, MICHIGAN—*Irving C. Root.*

The city grew in five years from 60,000 to 103,845. This rapid growth made many of our planning problems urgent and those involving the main thoroughfare plan were given first attention. Ten miles of main thoroughfares and parkways were secured by gift, purchase and condemnation. A table of main thoroughfares show the ultimate required widths. New build-

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ings erected on these streets must observe set-back lines. In this manner the future street is kept free from encroachment and widening can be done at nominal cost when required.

The city plan was made more effective particularly in regard to the control of new plats by the extension of the city limits, increasing the area of the city from 8,020 acres to 18,600 acres.

593 acres of new park lands were acquired, 120 acres (by gift) 473 acres (by purchase) total purchase price \$1,333,200.00 provided by three bond issues, the most extensive single purchase was Oak Grove Park, 58 acres, costing \$750,000. This will be used as a site for a new high school group.

The area required for the east side industrial district was completed by additional purchases of land during 1920. It comprises 1,000 acres, was purchased by public spirited citizens and will be sold in desired sites for approved industries desiring to locate in Flint.

DETROIT—*T. Glenn Phillips.*

*Streets and Thoroughfares:* Some of the street improvements recommended in the comprehensive plan for future main traffic and business streets are now well under way and the property condemned, notably Woodward Avenue which has been widened to a uniform width of 100 feet from the six to eight mile road. The cost of condemning all the land required for a distance of two miles was \$29,000.00. This is a good example of planning in advance of property improvements.

*Land Sub-Division and Plats:* Forty-eight came before the Board for recommendation and thirty-six final plats have been favorably acted upon. This function of the commission is one of the most important in that it

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provides for future orderliness for city growth both within the city and for a radius of approximately twenty-five miles around it. The auditors of Wayne county have officially adopted our plan of thoroughfares outside the city limits and public dedication of these traffic arteries will be required before future plats and sub-divisions are accepted. It is understood that the authorities of Oakland and Macomb counties will co-operate in the same way.

*Parks and Boulevards:* A tract of 150 acres adjoining Palmer Park was condemned by the city and paid for out of the \$10,000,000.00 bond issue adopted by popular vote in April 1919. Progress has been made on the plans for an outer drive 150 feet wide and approximately 46 miles in length. Nearly three miles have already been dedicated. Favorable co-operation has been received from a majority of the land owners along the entire route looking to the dedication of enough land to complete the drive. Plans have been prepared for the design and development of Elizabeth Park which comprises a 155 acre tract of beautiful wooded land located on the upper hand of Slocum Island. This is the first unit of the proposed County Park System.

*Designs and Planting Plans:* The commission has been active since 1920 preparing landscape and development plans for various departments of the city especially the Department of Parks and Boulevards and the Board of Education.

*Play Grounds:* Five of the twenty playground sites recommended in the 1919 schedule have been condemned during the past year amounting to 8.15 acres; also two play fields amounting to 40.7 acres have been condemned.

*Port of Detroit:* A complete survey has been made of existing conditions along the Detroit River with a view

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to a study of future port facilities. This survey together with various studies representing typical development of the best modern ports will be embodied in a report to be presented early in 1921.

*Zoning:* The zoning program was completed during 1920 and further progress in zoning is waiting on the passage of the zoning act by the State Legislature.

AKRON, OHIO—*C. F. Fisher.*

A topographical map of the city and the territory for three miles outside drawn to a scale of 800 ft. to 1 in. and twelve sectional maps covering the city 400 ft. to 1 in. were made in the office of the Plan Commission. Tentative park and playground plans including a boulevard encircling the city and connecting the four largest proposed parks were prepared. Bond issue of \$2,000,000.00 to purchase parks and boulevards received 3,000 votes more than a majority. The validity of this bond issue is being litigated.

All the information necessary for the preparation of the zoning plan has been gathered and a tentative ordinance will soon be ready for public hearings. A bond issue of \$650,000 has been passed for the widening of West Market Street to 98 feet. During the year 1920 new buildings costing \$4,550,620.00 were built or construction started on streets having set-back lines—the value of the buildings which observed set-back lines and will not be damaged when the streets are widened in the future amounting to \$4,287,100.00 or 94.20% the value of all buildings built on the streets. With the exception of seven two-story buildings all the non-conforming buildings were one-story, principally of wooden construction. New sub-divisions totalling approximately 2,000 acres have been passed upon by the commission. Sixteen playgrounds containing more than 50 acres were dedicated in new allotments and 15 parks

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or playgrounds containing 90 acres are included in allotments that have been given preliminary but not final approval. The commission has initiated proceedings for the formation of a metropolitan park district for Summit County.

BETHLEHEM, PENNSYLVANIA—*Robert L. Fox.*

The area of the city as a result of a consolidation was 3.21 miles with a population of 50,000. It was already developed to a point of congestion and to provide for expansion and to prevent undesirable development in the surrounding territory, the area of the city was increased to 17.79 square miles in 1921, an increase of 454%. This increase of territory will make effective, the control over sub-division lay out and prevent undesirable building operations in the annexed territory. The water supply of Bethlehem at time of consolidation was adequate only for 16,000 people. The city has now acquired at a cost of \$1,700,000.00, the Bethlehem City Water Company with a plant capable of supplying a population of 60,000.

Previous to consolidation no general program of street paving existed. During 1918 a paving program was developed based on providing loops of travel. The same program also lay special stress on the importance of paving arteries in and out of the city. The result is that the mileage of first-class street paving has increased from twelve to twenty-seven miles.

*Parks:* At the time of consolidation the city had no parks or playgrounds. To-day the city has a scheme for a comprehensive park system and Saucon Park embracing over 100 acres of land has been secured and developed through the generosity of citizens and industrial corporations. In exercising its function of supervision over new sub-divisions, the planning commission has adopted the policy of requiring the donation of 10%

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of the net area of the sub-division for community purposes. Since 1918 many plots of land have been secured in the outlying districts through this policy.

There has been installed an equitable system of property assessment based upon the per front foot valuation of land. Land is assessed on a 100% basis and improvements on 60%.

NEW BEDFORD, MASSACHUSETTS—*George H. Nye.*

During the very rapid growth of New Bedford it has suffered from the methods of out of town land speculators who cut up their sub-divisions by street plans not designed for the benefit of the city. To remedy this, the city secured the passage of a bill creating a Board of Survey. It is unique in that it constitutes the Mayor and Board of Alderman as the Board of Survey with the City Clerk as Clerk of the Board and the City Engineer as the Engineer of the Board. Since its creation there has not been an attempt to force a sub-division without the approval of the Board of Survey. About 32 miles of streets have been located by the Board with hardly an objection and without any expenditure for damages. A plan for an outlying district containing 30 miles of new streets will probably soon be adopted.

BALTIMORE, MARYLAND—*Jefferson C. Grinnalds.*

Baltimore has a topographical map on a 200 foot scale for 32 square miles of the city and is now extending this map to cover the other 60 square miles. The first 32 miles cost \$250,000 and already \$100,000.00 has been appropriated for the remaining 60 and \$100,000.00 more will be appropriated next year. The major street plan for the first 32 miles is about 90% completed and in accordance with the plan.

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All the property in four blocks in the area of the city has been acquired for a civic center. One block has been razed and parked for a plaza. The ordinance creating a zoning commission is now in the Council and the City Planning Committee will have all the necessary data to draw the zoning plan by the time the zoning commission is ready to function. At the election last fall, voters approved a \$10,000,000.00 harbor loan, a \$23,000,000.00 water extension loan and a \$28,000,000.00 public improvement loan for street openings, widenings, paving, schools, etc.

WILLIAMSPORT, PENNSYLVANIA—*Lyons Mussina.*

The planning commission has been operative for nearly one year. It has made a number of recommendations as to street conditions which have been approved and are now being carried out, has passed upon many sub-division plans and is now working on the preparation of a general city plan upon which real progress can be reported. The city's greatest need is zoning in which we are handicapped by having no state law permitting zoning in third-class cities.

## A MAJOR STREET PLAN FOR PITTSBURGH

JAMES D. HAILMAN

*Pittsburgh*

The Plan, of which a synopsis only is at this time possible, is the result of studies undertaken by the Citizens Committee on City Plan of Pittsburgh, an unofficial body of private citizens whose purposes are perhaps best set forth in the following paragraph:

"This Committee was organized with the single object of producing the Pittsburgh Plan, to give Pittsburgh an orderly, scientific, comprehensive program of city building, and to secure for the people of the city greater comfort, health, convenience, utility and beauty in their daily lives. The Committee has no political connections and no partisan purposes."

The methods by which the results so far obtained, including the suggestions regarding the street system, have been arrived at, are possibly unique in city planning work. It has been usual for persons or bodies interested to engage an expert to make the necessary investigations and prepare the report and plans on the subject under consideration, the same being scrutinized only more or less carefully by the promoters. The Citizens Committee has adopted an entirely different plan, as each division of our program so far taken up has been studied in detail by the members of a sub-committee comprising persons specially qualified to deal with the particular subject, assisted, of course, by a competent office staff and guided by the advice and experience of an expert consultant. The results obtained by the sub-committee are subsequently subject to criticism or correction by our Executive

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Committee. The time consumed by this procedure is probably greater than by the customary method but the results obtained are, at least so far as Pittsburgh is concerned, much more tangible and satisfactory.

The Major Street Plan has been thus prepared by a sub-committee of seven, of whom four are engineers, and it has had the assistance of Harland Bartholomew as Consultant. Almost a year has been given to the work during which time the committee has had 39 slated meetings, besides many informal conferences and consultations. The decisions arrived at will be soon presented to the public in a printed report, a summary of which, as taken from preliminary drafts prepared under the supervision of Frederick Bigger, Executive Secretary of the Citizens Committee, is the subject of this paper.

### GENERAL PROPOSALS

The Major Street Plan is a scheme of arrangement of main thoroughfares. It is the system of main routes of travel. The proposed major street plan includes existing streets, together with certain very necessary new streets and new connections and extensions. All these streets taken together form a plan so selected and designed as to afford, so far as possible, direct, continuous and easy communication through the city and from one district to another.

A street placed upon the city map or a street developed upon the ground is not necessarily a thoroughfare. It will only be a thoroughfare if it is so developed as to attract and facilitate traffic. It must be adequate in width and type of paving. It cannot have excessive grades if it is to properly fulfill its function. An eminent city planner has said, "*To design a street according to its probable use is a reasonable but uncommon practice.*" To fully achieve its purpose a thoroughfare

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must be part of a co-ordinated system of thoroughfares; and a complete co-ordinated system of this kind is a major street system. It is now proposed that Pittsburgh should develop such a system.

Because of the present narrow width and heavy grades of many of Pittsburgh's main thoroughfares, it is very important to differentiate between major and minor streets. For example, the expense of constructing all streets to carry through-traffic is much greater than of correctly selecting a few streets and developing them for this purpose. In some cases it is difficult to make the selection; and the Committee presents recommendations only after the most careful study. Much of the difficulty of selecting the major streets is due to general confusion regarding routes of travel. Motorists seek detours to avoid congestion, bad paving or heavy grades. Each favorite detour of one man becomes to him an important thoroughfare. Often he thinks in terms of good paving rather than directness of travel. The Committee has given special consideration to approximately 125 streets or portions of streets. These comprise roughly about 80 routes of travel of varying length and importance.

The minor streets, in contrast to the major street system, are of local value and importance; they are tributary to the major streets; and they serve within limited areas. They would serve these purposes better if they were so arranged as to discourage through-traffic from using them.

### CORRECTIONS AND DEVELOPMENT PROPOSED:

The Committee proposes the development of the system of main thoroughfares, with such corrections as may be necessary, in order to secure (1) more direct, definite, and ample routes between residential districts and business or industrial districts; (2) similar routes

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between business or industrial districts; (3) routes between residential districts; (4) continuous cross-town arteries; and (5) routes through which traffic may be "by-passed" around the downtown business district (The Triangle).

An especial point has been that of making the major street plan flexible,—that is, making possible a maximum choice of routes and communications without useless duplication of thoroughfares. When this is done, the Committee believes that transportation questions may be more readily and satisfactorily answered; that employees, working downtown or in any business or industrial district, will eventually have an approximately equal choice of the district in which they wish to live. This in turn will be of very great importance to *employers* in their problem of retaining working forces regardless of the part of the city in which the employees live.

The most significant phase of the plan prepared is that of establishing the through routes of travel and the inter-district routes which are necessary for the development of free circulation of existing and future traffic.

### GREATER CAPACITY REQUIRED:

A second phase, and one likely to be misunderstood, has to do with increasing the capacity of main traffic arteries. *It should be forcibly emphasized that the committee does not claim that it is now economically possible to undertake the suggested street widening or that, when undertaken, it will be practicable in all cases to secure the street widths which the city should have.* Nevertheless, the Committee realizes that, in time, some of the difficulties may seem less serious than they now appear, and that increasing population and wealth (and therefore increased capacity to pay) will tend to

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justify costs. Therefore in this report the Committee states *those minimum widths for each thoroughfare, which width, in its judgment, indicate the importance and value of that street as a traffic artery, and represent what the city should strive to secure if it is economically possible.*

At a later date, when studies have been made for the transit use of streets (i. e. the layout of street car transportation lines), it will be possible as well as desirable to adjust the Transit Plan and this Major Street Plan to each other.

### TOPOGRAPHY:

The Committee believes that the difficulty of topography in Pittsburgh is so great as to stimulate effort to overcome it. It has prepared a map which shows the topography as if it were modeled. Only such a map will make clear the reasons for the winding and circuitous direction of many of the principal thoroughfares of the city.

To change the grade of a thoroughfare frequently entails changing the grades of intersecting streets; and the widening of a thoroughfare, especially if it lies along a hillside, often affects intersecting streets in a similar manner. It will be seen at once that under any such conditions the cost is much greater than would be the case if only the main thoroughfare itself were affected. This characteristic, peculiar to our rough topography, makes such improvements cost the City of Pittsburgh from one-third more to several times the cost to other cities which have more favorable topography. These physical and financial difficulties are important causes of the city's failure to develop hitherto a more complete and adequate thoroughfare system.

The heavy grades on some of the thoroughfares emphasize a further inadequacy of the major street sys-

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tem because heavy grades are avoided by heavy trucking and to some extent by lighter vehicles. This implies less direct and rapid travel.

Another condition worthy of attention in examining the street system is the relation of this system to the distribution of population. The best and most adequate thoroughfares and routes are invariably best suited to transportation and therefore encourage development of adjacent territory. So it will be seen that the densest population is for the most part along or near the most adequate thoroughfare facilities.

### METROPOLITAN DISTRICT ROUTES

#### CITY STREETS AND COUNTY ROADS:

A number of the main arteries of the City are of especial significance because they lead out beyond the City into County highways,—some of them passing through well-developed and populous suburbs. These thoroughfares are logically part of the thoroughfare system of the metropolitan district, and they cannot be considered solely from the City's standpoint.

Thoroughfares which terminate inside the City or at the City line may have to take care of great increases in traffic due to a more intensive use of land in the areas which they serve. There is a limit to this, however, which might be computed. On the other hand, the thoroughfares which lead out into the suburbs and rural districts may be expected to have a much greater, perhaps unlimited, increase of traffic imposed upon them. There are seventeen of the routes of the major street plan in this category.

#### ROUTE No. 1

Penn Avenue from the triangle to the city line. It passes through densely populated portions of the city and will probably be the route of a rapid transit line. No change of grade

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is necessary and no connections or extensions. It should be made an eight-line thoroughfare.

### ROUTE No. 2

Butler Street with its connections forms a series of routes. All the outer road connections tap populous suburbs or territory where a large population may develop. No change of grade and no new connections are necessary. It should be a six-line thoroughfare.

### ROUTE No. 3

Lincoln Avenue together with a part of Frankstown Avenue, a radial thoroughfare from the East Liberty district to the Verona Road; thence to Oakmont. It taps territory where increased population is certain. It should be widened from the present 50' to at least 60'.

### ROUTE No. 4

Frankstown Avenue will be the main artery for a large territory beyond the present city line where a considerable population will likely develop. It should be a six-line thoroughfare as far as Bennett Street and four-line from there on.

### ROUTE No. 5

Fifth Avenue should be a six-line thoroughfare between Ross Street and Frankstown Avenue.

### ROUTE No. 6

Forbes Street going by the way of Braddock Avenue to Swissvale and eventually to Greensburg Pike. It should be a six-line thoroughfare.

### ROUTE No. 7

Second Avenue with its connections forms a series of routes leading from the triangle, and is potentially one of the very important routes of the city. Should be made a six-line thoroughfare as far as Glenwood Bridge and at least a four-line from that point to the city line.

### ROUTE No. 8

East Carson Street reached by the way of bridges over the Monongahela River at Smithfield, South 10th and South 22nd Streets. It leads into the new McKeesport Boulevard. Merging with West Carson Street it forms a continuous artery on the south side of the Monongahela River. No other such thoroughfare is possible on the south side. It should be a six-line thoroughfare.

### ROUTE No. 9

West Carson Street (see above) connects with the Steubenville Pike. Should be a six-line thoroughfare.

### ROUTE No. 10

This route leads from West Carson Street at the mouth of Saw Mill Run at which point a bridge over the Ohio River from the north side is proposed. It follows South Main Street,

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Mansfield Avenue, and Road through West End Park, connecting into the Middletown Road and leading to Carnegie. Should be a six-line roadway as far as West End Park and at least four-line beyond.

### ROUTE No 11.

This route consists of the proposed bridge over the Monongahela River, the Liberty Tunnel and West Liberty Avenue. By side streets it serves Brookline and Beechview, and leads through Dormont and Mt. Lebanon and eventually to Washington, Pa.

### ROUTE No. 12

Brownsville Avenue, Arlington Avenue from Warrington Avenue to South Eighteenth Street and Brownsville Road. Should be a six-line roadway.

### ROUTE No. 13

California Avenue is the basis of this route. It is to the north side what Penn Avenue is to the central district and will in time probably be the route of a rapid transit line. Realignment of parts of California Avenue are desirable. This route should be a six-line thoroughfare from the Manchester Bridge to Columbus Avenue, and an eight-line thoroughfare beyond.

### ROUTE No. 14

This route leads northward on Irwin Avenue from Western Avenue, requires a new diagonal connection from Irwin Avenue to Brighton Road and follows Brighton Road to the point where it merges with Route 13 in Bellevue. Should have a six-line roadway throughout.

### ROUTE No. 15

Federal Street and Perrysville Avenue; this route taps territory north of the city limits where an increase in population may be expected and serves a very populous district on each side of Perrysville Avenue. Physical obstacles make realignment or reducing of grades of Perrysville Avenue difficult but increase of roadway capacity should be secured.

### ROUTE No. 16

East Street from East Ohio Street to Evergreen Road leads directly and with excellent grade to the open country beyond the north city line. Should have a six-line roadway.

### ROUTE No. 17

East Ohio Street is the main artery from the North Side to Millvale, Etna, Aspinwall, etc. and leads into the Butler Plank Road and Freeport Road. Increased population in the transverse valleys which break through the hills of Millvale and Etna would naturally follow this route to the city. The widening of East Ohio Street to 56' east of Heinz Street is now being completed and that width is probably all that can be hoped for. Six-line thoroughfare from Federal to Heinz Street is recommended.

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### ADDITIONAL ROUTES OF GENERAL CIRCULATION

In addition to the thoroughfares previously described, there are many others which are important. The Committee has noted and described 58 routes in addition to the 17 Metropolitan District routes already called to your attention, and the streets entering into these routes have been studied as to existing conditions and their ultimate value in the circulatory system.

The information received together with the Committee's recommendations as to desirable connections and extensions, as well as minimum widths and traffic values, has been tabulated and will be issued as a part of the Report.

### TRAFFIC COUNT:

Information as to the burden of traffic now imposed upon certain streets at especially selected points has been secured by a city-wide traffic count made on October 28th, 1920. This count shows the number of vehicles moving in both directions past each counting point during each fifteen minute period of the day. The total traffic carried by each street upon which counting was done will also be shown and the volume of traffic during the particular hour of the day when the greatest number of vehicles (both directions) pass each counting point.

### THE DOWNTOWN TRIANGLE:

Congestion has reached a serious point in the downtown business district (The Triangle). This most obvious and spectacular congestion is very largely a symptom, the causes of the trouble being for the most part found beyond the limits of the Triangle itself. With the correction of those troubles there will be secured a more uniform flow and diffusion of traffic, and congestion will be materially relieved. However, as

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the population of the Pittsburgh district increases in number and as a larger proportion of this population makes use of motor vehicles a more intense congestion in the Triangle will develop. The improvement of traffic conditions in the downtown district divides itself into two phases: (1) the improvement of certain existing Triangle streets and (2) the making of such improvement in the thoroughfares beyond the Triangle as will encourage through-traffic to pass around this district and will assist in the more uniform distribution of traffic between the Triangle and its tributary, or "feeder" thoroughfares.

### FIRST PHASE OF IMPROVEMENT:

The improvement of streets in the Triangle now being undertaken by the City (widening of Second Avenue, Ferry and Diamond Streets) will undoubtedly facilitate the circulation of traffic, but the exact measure of relief which this will give to congestion on other streets cannot be exactly determined. The Committee recommends the improvement of three other streets which may properly be called Triangle streets, namely, Water Street, Duquesne way and Grant Street.

### SECOND PHASE OF IMPROVEMENT:

The second phase of Triangle traffic improvement, is the readjustment of major streets beyond this area so as to encourage by-passing the Triangle. There should be developed those routes which, when improved, will provide a number of more or less concentric triangles, the different sides of which are listed as follows:

#### *Southern Arms—*

1st Triangle—Water Street

2nd Triangle—East and West Carson Streets

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### *Northern Arms—*

- 1st Triangle—Duquesne Way
- 2nd Triangle—Lacock and Reedsdale Streets
- 3rd Triangle—East and West Ohio Streets
- 4th Triangle—North Ave. and Fayette St.

### *Eastern Arms—*

- 1st Triangle—Grant and Eleventh Streets
- 2nd Triangle—Ross Street
- 3rd Triangle—Liberty Bridge and northern continuation of same, together with southward projection of East Street and new bridge as described below.

### *Connections—*

Supplementing these arms of by-pass will be (1) the Point and Manchester Bridges and Galveston and Allegheny Avenues; (2) a new bridge at Saw Mill Run across the Ohio River to Chateau Street, together with Chateau Street; (3) the connection from Water Street up to Liberty Bridge as noted below.

Our traffic analysis shows that over 16% of traffic now passing through the Triangle would be encouraged to by-pass this district by using the routes above listed. And of course these streets and bridges would be intensively used by traffic between the Triangle and other districts and by local traffic.

A great part of the most serious inadequacy of the Triangle street plan is in that district just east of Grant Street and particularly at the intersection of lower Webster Avenue now called Bigelow Boulevard, with Sixth Avenue and with Grant Street. Conditions in this locality are so bad that a radical change is the only thing that will correct them. The change proposed by the committee will enlarge the business area of the Triangle and bring great increase in value. It is one of the most significant of the committee's recommendations and also one of the most difficult of accomplishment because of the many property holdings involved. The detailed changes cannot be given here because of the limits placed upon this synopsis.

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Other recommendations are:

- (1) In connection with the north approach to Liberty Bridge.
- (2) Extension of East Street south from East Ohio Street upon a viaduct to the river, the construction of a bridge across the Allegheny River from that viaduct, and the extension of such bridge over Penn and Liberty Avenues and the Pennsylvania Railroad to Bigelow Boulevard in the vicinity of the Pennsylvania Station.
- (3) The widening of Tunnel Street to secure a 54" roadway from Fifth to Webster Avenue.
- (4) The widening of Fernando Street to 60' and its projection at the same width into Seventh Avenue and the lowering of grades on this street between Fifth and Seventh Avenue.

### SPECIAL AREAS:

In addition to the major street plan already described, it will be found desirable to develop arteries to certain undeveloped or partially developed areas of large extent not in or closely contiguous to the city. This idle land offers large opportunities for housing the people in comfortable and well ordered homes when proper traffic and transportation facilities are provided and may serve important uses in this and other ways in the coming development and advancement of the community. It is therefore the part of wisdom to prepare for rendering them easily accessible and they are noted here as subjects for future study, possible connections to them having been under consideration. There are six of these localities; three in the city, Hazelwood; Glenwood, which would be served by the development of Johnstown Avenue; Brookline Ridge, and Beechview Ridge; and three just without the city limits—Washington Pike Ridge where there is splendid building land sufficient to house 50,000 people but lacking proper access; Swissvale-Rankin-Braddock, which district could be served if Second Avenue were extended, and Reserve Township.

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### DEVELOPING THE PLAN:

In thinking of the physical development of the major street plan, particularly with respect to increasing the capacity of streets, Pittsburgh in common with other cities must meet the increasing traffic burden upon her streets due to the increasing number of passenger and trucking automobiles. Traffic capacity of streets may be secured in several ways, of which the following are noted.

*Removal of Street Car Lines:* Until the completion of the Transit Plan it is impossible to state to what extent this method may be used to increase the capacity of Pittsburgh's main thoroughfares.

*Direct Widening of Streets* involves destruction of buildings and may be very costly. Also involves change of grades at intersecting streets.

*A compromise in widening* which will increase traffic capacity, may sometimes be effected by widening the roadway between the curbs and moving the sidewalks over into arcaded ways under the buildings.

*Prohibiting Parking of Vehicles at Curbs* to be really effective would imply preventing vehicles from stopping. On a four-line roadway having street car tracks the prohibition against vehicles standing at the curbs would not only be a great public inconvenience but would also seriously interfere with the business of merchants located on such a street.

*Two-level and Three-level Streets.* If the adequate widening of streets is not secured, the demands of traffic upon this main thoroughfare system must be met in the only other possible way, namely, the creation of two-level or even three-level streets. This means the construction of subways or elevated arteries, or both. To construct elevated ways on narrow streets implies great depreciation in value of property facing thereon. The subway or elevated also makes difficult the proper

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sidewalk provisions and provision for stations of rapid transit lines.

### STREET MILEAGE AFFECTED:

A summing up of the total effect of the recommendations, covering increased capacity, will show that it is proposed to eventually widen 106.15 miles now existing and add in new streets or extensions 19.94 miles to the system—over 120 streets in all being listed. As an interesting comparison it may be noted that the Cleveland Plan affects 98 streets of which 190 miles are widened and new thoroughfares are suggested amounting to 23 miles. In the St. Louis Plan 50 streets are affected and the figures are 69 miles for widening and 17 miles for new locations.

### TIME AND COST:

The proposals which have been set forth in this paper constitute a program which will doubtless extend over many years and require the expenditure of large sums of money. Nevertheless they have been conceived in a necessarily conservative spirit and are by no means as ambitious as some born in our sister cities. The location and topography of Pittsburgh add difficulties here which are not present elsewhere and

Legal and financial obstacles also exist which it is hoped and believed will be removed in the future. Necessary procedure to this end will also be discussed in the forthcoming report.

In conclusion it may be said that the spirit of city planning is abroad in Pittsburgh as elsewhere and there is every reason to believe that our citizens recognize its importance as the ultimate factor in civic progress. Their interest in and support of work of the character just outlined attest this and is a happy augury for the future.

## MAIN HIGHWAYS IN METROPOLITAN DISTRICTS, CONSTRUCTION, MAINTENANCE AND CONTROL

WM. MCCLURG DONLEY,

*Consulting Engineer Allegheny County Planning Commission.*

One of the most difficult problems confronting the advocates of Regional Planning and Metropolitan Districts, is the establishment of main arterial highways and providing for their construction, maintenance and control.

The Pittsburgh Metropolitan District would include most of Allegheny County and small parts of adjoining counties, having an area of over 600 square miles and a population of one and one quarter millions;—being about fifteen times the city area and about double the population.

Allegheny County has one second class city, three third class cities, seventy boroughs and fifty-six townships, with the City of Pittsburgh located about in the center. There are about five hundred and sixty miles of county improved roads of all types, exclusive of cities and boroughs.

The State, under the Sproul Act of 1911, designated thirteen roads in Allegheny County as State Highway Routes approximating one hundred forty-seven miles, exclusive of the mileage within boroughs. These routes cover eighty-six miles of improved county roads whose original cost to the county was over one million eight hundred thousand dollars;—eight miles

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improved jointly by the county and state, and about ten miles by the state, making one-hundred and four miles of "Improved State Highway Routes," and forty-three miles unimproved. The county maintains eighty-six miles of improved State Highways, while the state maintains about eighteen miles. Exclusive of maintenance the county has re-constructed State Highway Routes at a cost of over one million dollars during the past few years.

As an illustration, one main artery passing through the center of the county from east to west, along the northerly side of the Ohio and Allegheny Rivers, is forty miles in length, passes through nineteen boroughs and eleven townships and the City of Pittsburgh, while the Lincoln Highway, thirty-one miles in length passes through the City of Pittsburgh, seventeen boroughs and six townships, having all kinds of alignment various widths and many different types of pavement, with the method of maintenance differing in each community. This is true of most every highway within the proposed Metropolitan District.

There is no section in the United States that needs regional highway planning immediately, as does Allegheny County, on account of the topographical conditions. Many of the through routes have been diverted in order to touch some town or hamlet and these should be relocated along a more direct route. They should all be three way roads or more having a minimum width of twenty-seven feet, good alignment, curves properly banked, standardization of specifications, drains, culverts, type of paving, guard rails, signs and road markings, etc. Due to the side hill construction, change of subsoil and gradients, reinforcement should be used in a concrete roadway or foundation. The upper or hill side edge of all roads should be curved, eliminating deep gutters. Wherever possible grade

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crossings should be abolished before the land becomes valuable and obstructions erected, all established through routes or main arteries should be made sixty feet in width, eliminating all dangerous curves.

The old policy of making highway bridges of less width than the improved road should be reversed; for safety and clearance the bridges should be from three to five feet wider than the roadway.

Highway maintenance divisions should be established, allotting about eighty miles of road to a division. Warehouse, yards and railroad sidings should be in each division for the storage of materials, etc. A superintendent, foreman and storekeeper should be placed at division headquarters. One central supply shop should be built for materials, equipment and repairs.

All roads should be stationed and marked plainly, for maintenance references.

It is important that legislation be enacted creating a Highway Commission with some authority to lay out and plan a complete system of main highways throughout the county adapted to the future needs of the region for a hundred years to come.

This Commission should have power to proportion the cost of construction and maintenance among the State, County, Cities, Boroughs and Townships, and all plans and highway improvements should first meet with the approval of said commission before being approved by the Court. The personnel of this commission should consist of at least five men;—one engineer, one attorney and real estate man, appointed by the Court and not subject to political changes;—also to have authority to levy a tax not to exceed one-fourth of one mill for the purpose of employing such engineering talent, draftsmen and additional help necessary to develop a system of main highway routes.

## LEGAL ASPECTS OF TRAFFIC CONTROL

CHAS. B. PRICHARD,  
*City Solicitor, Pittsburgh, Pa.*

Someone has pictured a city in these words:

"A city is human life crowded to its most glorious expression. All things human are there raised to their highest degree. It is a powerful magnet that attracts to itself the ablest men and the best things. Wealth is there concentrated in a rich soil that blossoms out into magnificent streets, buildings, parks and works of art. It is the scene of the intensest activities of men, where they fight their greatest battles and win their noblest victories. Human character there attains its fullest and finest development and shines out in the greatest beauty. Greatest cities have ever been centers of civilization, seats of government and power, commerce, literature and art. Rome was mistress of the ancient world. Athens was Greece and Paris is France. It is true that human sin also reaches its greatest depth and blackness in the city. In the midst of its abounding wealth and luxury is the direst poverty; its palaces stand close to its slums and beneath its splendid robes are the most hideous shapes and sores of evil."

What a wonderful institution does this picture present! A city is a grand conception. True it is that the history of civilization is the history of a few cities. Certain it is that the progress and welfare of a nation depend upon the progress and welfare of that na-

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tion's great cities, and the progress and welfare of the world depend upon the progress and welfare of the world's great cities. Every truly patriotic man and woman in a city, every heart filled with civic consciousness and civic pride ought to join in dedicating the best thoughts and the most earnest efforts to promoting, furthering and preserving the great and good things in our cities, and to striking down and eradicating the poverty, squalor and human weakness, and the ignorance, vice and crime. Let us all join in the noble sentiment of the prayer of a genuine city patriot, when he cried, shortly after the close of the recent World War, "Oh, that some magic influence would take the place of the Great War and inspire our hearts and heads to give one-tenth of the time to solving city problems, that was used in the one hundred one War activities."

One of the gravest city problems confronting our cities today, and one that must be solved, is that of traffic control. Traffic, in its narrower sense, is the interchange of goods and commodities either by barter or by buying and selling between countries, communities or individuals; it is trade and commerce. In its broader sense, it includes not only trade and commerce, but also the passage and transportation to and fro of people, either individually or in groups, not only for trade and commerce, but also for social and other intercourse. The history of traffic is the history of civilization; the history and development of the traffic of a great city is the history and development of that city.

In the beginning, the main concern of the people of a community with traffic is its propagation and development. As traffic grows, however, a point is reached when a new factor enters into the problem. Sooner or later, the traffic must be regulated and con-

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trolled. Otherwise, the very development which has been sought and fostered will reach a point where traffic will threaten to stifle and destroy itself. This is peculiarly true in the large cities, the great congested marts of trade.

In many of our great cities today, that point has already been reached; in many others, it is rapidly being approached. Trolley cars, taxicabs, motor-propelled passenger vehicles of various other kinds and trucks have contributed materially to the development of traffic. They are largely responsible for the conditions as they exist today. Streets and highways and the devices and methods for regulating and controlling traffic are becoming inadequate, and in many cases, systems are breaking down; stagnation and paralysis are bound to result unless the situation be met and overcome by comprehensive, wise, sane and effective measures. New facilities and new devices and methods must be provided, and, in all probability, new legislation will be required.

Fortunately, we have at hand to meet the problem of regulating and controlling traffic, three great sovereign powers of government. All have been invoked in the past. All are capable of greater expansion for the purpose of protecting and promoting the general welfare in providing the necessary facilities required by increasing traffic and for regulating and controlling the same, so that it will continue to be a benefit instead of a menace. These three great powers are taxation, the right of eminent domain and the police power.

The streets of our cities are at the base of, and the key to, the problem. The present systems of thoroughfares constitute the nucleus. Where they have become inadequate, the taxing power and the right of eminent domain afford the legal means of improving,

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straightening, widening, extending and otherwise treating existing thoroughfares. These two great powers also afford the legal means of acquiring and improving new streets from time to time to relieve the burden on the existing systems, thereby meeting intolerable traffic conditions and promoting a healthy expansion of traffic and city growth. The taxing power and the right of eminent domain inhere in, and are necessary parts of, the sovereignties of the several states. These great powers have been adequately and effectually delegated to the cities. Their exercise by cities has only been limited and restricted by constitutional and statutory provisions to prevent abuse thereof. Therefore, ample power rests in the state, inherently, and in the cities, by delegation from the states, to provide, improve, extend and maintain the necessary streets and highways ways which lie at the root and base of the problem of traffic control.

Moreover, in many forward-looking states statutory enactments have placed in the hands of municipalities the power to forecast and provide for the future. An example of such authority to forecast and provide for the future is found in the Act of Assembly of the State of Pennsylvania, approved May 15, 1913, under which Act of Assembly the municipalities of the state are given power to locate streets and alleys, or to provide for the location or widening of streets and alleys, in the present, in such a manner that the property shall not be construed to have been taken with the passage of the Ordinance; but the lines shall be fixed, and when the time shall have come when the actual opening or widening shall be necessary, then, the municipality can open or widen; and, in the meantime, the owners of property affected may use the same, but shall not be allowed to recover damages for improvements made

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on the property within the lines so fixed. This is a tremendous power in the hands of the municipality, inasmuch as it allows provision to be made for a long time in the future and does not operate to increase the indebtedness of the city until the necessity for the actual taking has developed, thereby preserving to the city its borrowing power unimpaired, and, at the same time, making it possible, in the present, to provide for a less expensive operation, when the future time for the taking shall have arrived.

Another wise provision of the legislature is the creation in cities of City Planning Commissions or similar bodies, and clothing them with the power to study the present development of the city with reference to its streets and buildings; to zone the city; in many other particulars to control its growth; and to develop a comprehensive plan for its future improvement. Herein is created another great agency, which in its functioning cannot but render material service to the solution of the traffic problem of the future. The results from such wise and far-sighted legislation are already becoming apparent and it is safe to predict that in the future and at no distant date, the beneficial effects are bound to become more apparent and more keenly appreciated by the cities wherein such legislation is effective.

It is not sufficient, however, merely to provide streets and highways as arteries to accommodate traffic as it exists today and to meet its expanding requirements. The peace, good order, health, morals, convenience, comfort and safety of the public including not only those using the streets in traffic, but also all others affected thereby must be promoted and preserved. To perform this great duty, the state has inherent in it as an attribute of its sovereignty, and the city, by delegation from the sovereign state, a power

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of the broadest scope, under which everything necessary for the protection of the property of the citizen and the health, comfort and safety of the public, may be done. This great power is known as the police power. A learned writer and recognized authority on the law of municipal corporations, Judge Eugene McQuillen, of St. Louis, Missouri, has said :

“Police power of a municipal corporation extends to all things affecting the peace, order, health, morals, convenience, comfort and safety of its citizens. In brief, upon it depends the security of social order, the life and health of the citizen, and the comfort of and existence in a thickly populated community, the enjoyment of private and social life and the beneficial use of property. It is certain that the recent judicial decisions are inclined to give a more extensive scope to the police power than the earlier cases. The general welfare idea is extending rapidly. In its application to urban life, it is wide and varied. This generation has witnessed a decided change in the views of the Courts relating to the construction and practical operation of police ordinances. Greater power is conceded to be vested in the police authorities. Their judgment and discretion are more respected. The public welfare, in its broadest sense, has been adopted as the basis of construction. This position is sound and is certain to aid materially the development of better urban conditions. The proposition has been affirmed repeatedly that organized government has the inherent right to protect health, life and limb, individual liberty of action, private property and the legitimate use thereof, and provide generally for the safety and welfare of its people. Not only does the right exist, but this obligation is imposed upon those clothed with the sovereign power. This duty is sacred and cannot be evaded, shifted or bartered away without violating

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a public trust. Police regulations are based chiefly upon the Latin maxims:—"Salus populi suprema est lex"—"The Welfare of the People is the First Law"—"Sic utere tuo ut alieum non laedes"—"So use your own property as not to injure the rights of another".

While the police power of the state and of the city is broad enough to apply to private property and the use thereof where the general public welfare is involved, its application to the public streets and highways is even more apparent. Highways are under the plenary control of the legislature and the state holds them in trust for the public. Cities generally are authorized within the limits of their jurisdictions to exercise police power. They likewise hold their streets in trust for the public thereof. As has already been noted, police power is broad and comprehensive and may be invoked to meet new conditions where necessary to promote and preserve the general welfare. The Courts have wisely refused to define the limits of the police power, in order that that power may not be unduly restricted. As new traffic conditions arise and new methods of transportation are evolved, the police power remains capable of meeting the new conditions. There are many examples in the law, both written and unwritten, of this application of the police power. The laws governing the licensing and use of automobiles on the highways of the state and on the streets and thoroughfares of the City, the regulation of speed, the limiting of trucks and other heavy and slow-moving vehicles to certain streets and portions of streets, traffic regulations in a municipality, including one-way streets, parking restrictions, etc., are all examples of the application of the police power to changing conditions. Many such Acts of the Legislature and many such municipal ordinances and regulations are comparatively modern in their origin, and have been en-

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acted to meet traffic conditions which were absolutely unknown and unheard of in the recent past. They have become necessary to meet the increasing traffic and the changed conditions due thereto.

It is not our purpose, today, to enter into an extended discussion of these various enactments or the reasons therefor or the results thereof. They present a very interesting legal phase of traffic control. Brief mention of them serves to indicate the circumstances under which the police power may be invoked and the effectiveness and applicability of such power in the cities, as well as in the States.

Again, the Courts have a very important function in the matter of traffic control. In the Civil Courts, for instance, many cases arise in connection with traffic. The law of the road is involved; the principles of negligence are to be construed; likewise, many issues as to the conflicting rights and duties of persons and vehicles in traffic are to be determined. It is readily to be seen that the Civil Courts, in the trial and decision of many private issues growing out of traffic, play no unimportant part in the traffic problem.

In the Criminal Courts, too various phases of the traffic problem constantly recur. These courts have to deal with many cases wherein persons are charged with the improper use of vehicles—especially the automobile. Drunken automobile drivers and those whose negligent use of automobiles result in death are answerable in the Criminal Court. Many other criminal offences connected with traffic are within the purview of these Courts, and, insofar as the Criminal Courts function properly and fairly and impartially apply the laws and mete out adequate and proper sentences, so far do these Courts operate as an effective factor in traffic control.

In a municipality, there are numerous departments

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charged with duties more or less directly involved in the traffic problem. Of course, the function of the police department in connection with traffic is obvious. The Health Department, especially in its supervision over public conveyances, is interested. Various departments and bureaus having to do with the repair and maintenance of the streets, the cleaning and washing thereof, their inspection, supervision and safeguarding, all have their important part to play. It would be interesting, if time and space permitted, to develop in detail the functioning of these various departments and bureaus, as well as many others in the City, but what has been said is sufficient to show the broad scope of the municipal activities daily involved in regulating, controlling and developing this important subject, which has reached such an acute stage in our great cities.

The legal phases of traffic control, the legal propositions involved and the many governmental agencies, charged with responsibility in connection with this problem, are important. The problem, however, appeals in a broader sense than the mere administration or application of law to those who have had experience in the practical control of traffic. Laws alone are not sufficient. Earnest and intelligent efforts on the part of those charged with the administration and enforcement of the law are not sufficient. The public is, in the last analysis, the most important factor. The public must first be educated in the provisions and requirements of the laws and regulations entering into the traffic problem. But, over and above all, the public must be impressed with and imbued with a healthy spirit of wholesome regard for the law. Public opinion is even a greater force than law. A proper attitude of the public toward traffic control appears to be the most important factor in the solution of the problem.

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While new laws and new regulations may, from time to time, be necessary, yet there are, for all practical purposes, sufficient laws and sufficient regulations, broad enough in scope if properly adhered to and properly observed, materially to benefit the traffic situation.

In conclusion, we may sum up as follows:

There is ample power in the City, by the exercise of the sovereign powers of taxation and eminent domain to provide proper facilities for the accommodation and control of traffic. The police power, which has been adequately delegated to the municipal authorities, controlling streets and highways, is ample to provide safety and convenience and to promote the easy flow of traffic and otherwise to control the same. There are various branches of the government and many departments in the municipality performing important functions in connection with traffic. If all of these powers and agencies of the government functioned intelligently, effectively and aggressively, and, if added thereto, there were a proper attitude of the public itself toward the problem and the laws, then proper traffic control in the best interests of the general welfare is bound to result, and the traffic problem is bound eventually to be solved.

## DISCUSSION

### SUGGESTIONS FOR STREET WIDENING

The general subject of street widening was considered by E. P. Goodrich of New York City, George H. Nye, City Engineer of New Bedford, George H. Norton, City Engineer of Buffalo and G. G. Whitnall of Los Angeles. The following is a resume of the points brought out.

It is the law of Pennsylvania that streets may be established on the "city plan" and that thereafter property owners who locate structures in such streets shall get no damages when the street is officially opened. It has been suggested that all states should secure this power by a constitutional amendment. If we started to do this in all states of the Union, it might be ten years before we accomplished much. Therefore the means used in different places to get the same thing by indirection should be interesting.

In Youngstown, Ohio, the city could not appropriate sufficient money to carry out extensive street widening under the power of eminent domain and yet the main street traversing the district of highest values in the city has been widened on both sides from ten to fifteen feet. The property owners donated the land taken for street purposes and the city paid for setting back the building fronts. According to the statement of one owner of a very valuable lot, his property had appreciated about \$30,000.00 because of this particular widening. The same plan has been applied on other thoroughfares in Youngstown and agreements have

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already been signed which will secure widening on several miles of streets. Meantime property owners may get permission to put one story temporary structures on the space in front of the proposed new line on the understanding that these structures are to be removed on due notice as soon as the authorities see fit.

It is easier to secure progressive street widening in cities where a zoning ordinance has been established because the highest structure is dependent upon the width of the street. Of course the proper plan is to prohibit improvements within the mapped streets. Some day the courts will go farther than they have at present and at least make a decision which will prohibit owners of large properties, as farms, from making improvements within the bed of proposed streets. Certainly there would be no hardship in such cases to compare with the hardship in the case of the owner of city lots.

Another indirect method which has been effectively used consists in the refusal of mortgage companies and title insurance companies to grant mortgages on structures erected in the bed of proposed streets.

All of this presupposes an authority for establishing official streets. That power at least the city should secure before it can get very far with any plan for opening or widening streets thereafter.

Much can be done by the control of sub-division lay out which is possible in many cities and which is effective in some. This control properly demonstrated induces co-operation of land developing companies. The authorities in the city of Buffalo are working out an interesting plan of co-operation with the municipalities surrounding Buffalo which will secure in the future adequate main thoroughfares serving this metropolitan area.

Set back lines or building lines can not be estab-

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lished under the police power when the purpose of the set back is to secure a street widening. It is a safe and fair method to establish building lines called by the lawyers "negative easements" under the power of eminent domain in the hope of securing waivers of damages from the property owners. It will be found quite the general experience that these waivers will be secured in a majority of cases.

An essential thing in street widening is the creation as soon as possible of a metropolitan major street system, and this is even more true where the climatic conditions as for instance those on the Pacific Coast put an even added burden on the highways with reference both to freight and passenger traffic. This added burden has increased tremendously the cost of making and amending adequate highways. To-day in many jurisdictions, highways of metropolitan improvements are built exclusively at the expense of the frontage owners. California is seeking by legislation to assess the cost of major highways over cities, counties and in some cases even the state. It is proposed to have the chairman of the county, governor and the proper official or department in the municipality determine which of the streets constitute the necessary links of the United States Highway system.

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### DISCUSSION

ARTHUR C. COMEY, *Cambridge, Mass.*:

The nomenclature of house types should be uniform. Instead of *community house* the name *row house*, as standardized by the United States Housing Corporation should be adopted. Its list of main types will be found in Vol. II of its Final Report (pg. 47) and is urged as a standard for universal use on account of its simplicity and its clearness, all the terms being now in common use and yet in no case apt to be misunderstood as they in themselves carry the clues to their correct interpretation. The seven types of housing, with their definitions, are as follows:—

*Detached house* (The "single house", one family in a building.)

*Semi-detached house* (A one-family house having one party wall in common with an adjacent house. Each half of the building is a "Semi-detached house", the whole building is a pair of semi-detached houses.)

*Row house* (A one-family house attached with two or more others to form a continuous row or group in which the several houses are separated from adjacent houses by party walls.) This type may be divided according to location in the group or row into:  
*Row end houses*, and  
*Row inside houses*.

*Detached 2-flat house* (The "duplex house", two families in a building, one over the other.)

*Semi-detached 2-flat house* (A 2-flat house having one party wall only in common with an adjacent house; normally one-half of a building containing four families, one in each story in each half.)

*Row 2-flat house* (A 2-flat house attached with two or more others to form a continuous row or group, in which several houses are separated from adjacent houses by party walls.) This type may be divided according to location in the group or row into:  
*Row end 2-flat houses*, and  
*Row inside 2-flat houses*.

*Apartment house* (The "tenement house", containing 3 or more families, normally one or more families on each of 3 or more stories, served by a common hall or stairs.)

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ROBERT H. WHITTEN, *Cleveland*:

As to the desirability of establishing a single family house district, much depends on the conditions prevalent in the particular city. The tentative Cleveland plan is similar to the tentative Pittsburgh plan in that there is no district that excludes the two family house. In Cleveland there only comparatively small areas that could properly be zoned for single family detached houses. Consequently it was deemed unwise to complicate the zoning by the establishment of a single family house district. In Cleveland Heights, on the other hand, the tentative plans provide for including a very large proportion of the entire area in a district that will permit only the single family detached house. Cleveland Heights is a residence suburb of Cleveland, and at present 90 per cent of the dwellings are single family detached houses.

While in Cleveland there will be no single family detached house district as such, it is believed that the lot area requirements will in almost all cases make the building of the two family house impractical in the areas that are deemed most suitable for the single family detached house. The lot area requirement will be 5,000 square feet of lot area per family so that if a two family house is erected 10,000 square feet of lot area will be required.

I am glad to note that the proposed Pittsburgh ordinance also regulates the area of the lot in relation to number of families that are to be housed on the lot. A lot area requirement varying the intensity of use in the various area districts seems to me absolutely essential to prevent undue congestion of population in a city like Pittsburgh or Cleveland. By absolutely limiting the number of families that may be housed on a given area of land, we can prevent even in the tenement house districts, the excessive congestion of popu-

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lation that has come about in New York and Chicago. I believe that height restrictions and court and yard requirements are not of themselves sufficient to prevent undue congestion. It is necessary in addition to regulate the area of the lot in relation to the number of families that are to be housed upon it.

EDWIN A. FISHER, *Rochester, N. Y.*:

It has been asserted, I think, by Mr. Cheney, that in his experience only about 15% of the new houses built in a district permitting two family residences were of the single family residence type. I should like to cite my own experience in Rochester. I live on a residential street which has a number of two family houses, and on which two family houses are now permitted under the zoning ordinance. About a year ago there were only three vacant lots on the street. These have all been built upon and all the buildings are single family houses, two of them above the average of the other houses on the street in both cost and architecture and the third as good as the average.

CHAUNCEY J. HAMLIN, *Buffalo*:

The topography of Pittsburgh especially lends itself to the decentralizing development of a number of business sub-centers or community sub-centers. It seems to me that particular attention should be paid to this situation, not only in providing for such centers in the zoning ordinance but also in the development of the major plan, each of these centers being directed in so far as possible as a separate and distinct community with its own business center and radial streets leading to and out of it. The suggestion is merely an extension of the idea of the satellite city in the treatment of the area within the congested portion of a rapidly growing city.

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The zoning ordinance as being worked out in Buffalo will provide for superimposing in the residential and other districts, height of buildings and area restrictions. We believe that this is the only practical way of handling the matter under the existing laws of New York, and that these restrictions will practically result in the correction of certain residential districts in which it will be uneconomical to erect any structure except single family houses.

JAMES R. MILLER, *Pittsburgh, Pa.*:

Mr. Clark, of the Pittsburgh Planning Commission, who has explained the proposed Zoning Ordinance for Pittsburgh, has referred to the efforts of the Commission to have new buildings on the lower part of Highland Avenue, set back ten feet from the street line in anticipation of a later widening and has mentioned a telephone exchange building of the Bell Company as one of the buildings involved. The request that the exchange be set back was partly because the corner at which it was located is a dangerous one for automobile traffic. Mr. Clark said he did not know what action the Bell Company would take. It will, no doubt, be of interest to this gathering to learn that the Bell Company has voluntarily agreed to set its exchange building back ten feet from the Highland Avenue line and that the construction work has already begun. It is also of interest to know that this voluntary action was taken after and notwithstanding the fact that when the Planning Commission introduced in Council an ordinance relocating the lines of Highland Avenue ten feet back from the present lines (to force others to do what the Bell Company was asked to do) the property holders made such violent protest that the committee of council which was considering the proposed ordinance tabled it and thus indicated that for the present

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at least the Bell Company will get no legal support in its action.

EDWARD M. BASSETT, *New York City*:

I agree that the establishment of set-back lines under the police power or as part of a zoning plan should not be for the purpose of creating streets. Such set-backs are to bring more light and air to the buildings. The court will frown upon efforts to create streets under the guise of a zoning plan. It is evident, of course, that unbuilt spaces between house line and street lines can later be used for widening the street. But it would be a mistake to try to support the set-back by an argument that it is done for future street purposes.

It is true that in the Bay Ridge section, one of the large E districts of Brooklyn, an apartment house has been erected since zoning went into effect. The reason for this was that the owner prepared plans before the zoning, but failed to file them. The zoning ordinance prevented his putting up the kind of apartment that he intended, so he modified his plans to bring it within the generous space requirements of the E zone. So far as I know no other apartment house has been built within a E zone for the last five years, nor so far as I know has any two-family house been built in such a zone.

The E districts in Greater New York correspond to the highly restricted districts for detached one-family houses in all of our great cities. New York needs a greater extension of these E zones for the homes of people with small incomes in parts of Staten Island and the Borough of Queens. Such homes cannot now be built at a sufficiently low cost. There is a genuine movement of such people from tenement houses to one and two family houses. The main thing is to bring down the cost of a suitable home and then protect it,

## THE PITTSBURGH ZONING ORDINANCE

JAMES M. CLARK

*Member of the City Planning Commission,  
Pittsburgh, Pa.*

On June 10th, 1911 the Pennsylvania Legislature passed a supplement to an act entitled "An Act for the Government of Cities of the Second Class" approved the second of March 1901. This Act established the City Planning Commission in the City of Pittsburgh and gives to the Mayor the power to appoint nine members thereof. This Act is almost entirely recommendatory.

The only real power given to the Planning Commission under this Act is the right to approve all plans, plats or re-plats of lands laid out in building lots and the streets, alleys or portions of the same intended to be dedicated to public use. It further provides that no such plan shall be recorded in any public office unless the same has been approved by the Planning Commission. Aside from this power the City Planning Commission could only recommend to the City or Council that certain things be done for the purpose of improving the streets and highways of the City.

In 1917 an act was submitted to the Pennsylvania Legislature with a view of giving power to second class cities in Pennsylvania to have themselves zoned. This act was late in being presented to the Legislature and failed of passage.

In 1919 there was passed by the Pennsylvania Legislature an act authorizing the zoning of cities of the

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Second Class. This act was approved on the 21st day of June of that year.

At the time of its passage the present City Planning Commission of Pittsburgh was in existence and as soon thereafter as provision was made by the Pittsburgh City Councils for financing the work to be done under this act, the Planning Commission started on its work to prepare the tentative ordinance which I have the pleasure of presenting to you today which has required a little over a year's work of the Planning Commission.

Mr. U. N. Arthur was employed as the Commission's Chief Engineer and Mr. Harland Bartholomew of St. Louis was employed as Consulting Engineer.

In addition to preparing this ordinance the Planning Commission has been kept busy trying to regulate buildings in Pittsburgh by use of moral persuasion, and it is surprising what it has accomplished solely on that ground. Soon we hope to have this ordinance passed by the City Councils and become a law, after which time we hope moral persuasion will not be necessary.

The following men compose the Pittsburgh Planning Commission: Joseph G. Armstrong, Chairman; James M. Clark, Maurice Falk, Henry P. Haas, J. D. Hailman, John S. Herron, A. J. Kelly, Jr., E. G. Lang and E. W. Mudge.

All of the foregoing men are conducting large private enterprises of their own, yet all have given freely and without compensation a large part of their time for the purpose of carrying out the said Zoning Act of 1919.

The tentative zoning ordinance now about ready to be submitted to the Council has been prepared with great care and we think and hope that, when it becomes a law, it will prove a model for all future zoning acts.

In principle the Pittsburgh ordinance closely follows similar ordinances now in force in several of the Amer-

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ican cities. The ordinance is a comprehensive zoning ordinance, covering the Use Restrictions, Height Restrictions and Area Restrictions.

The tentative draft provides for five classes of use districts; five classes of height districts and five classes of area districts, viz:

### USE DISTRICTS:

- Heavy Industrial District;
- Light Industrial District;
- Commercial District;
- "A" Residence District;
- "B" Residence District;

### HEIGHT DISTRICTS:

- Two and one-half story district;
- Three story district;
- Six story district;
- Eight story district;
- Ten story district;

### AREA DISTRICTS:

- "A" Area district;
- "B" Area district;
- "C" Area district;
- "D" Area district;
- "E" Area district.

### USE DISTRICTS:

The uses permitted and restrictions proposed to be imposed upon the various districts; height of buildings permitted and area of yards, courts and other open spaces required are briefly as follows:

The (B) Residence Districts will prevent uses of property and buildings for purposes other than single and two family dwellings, churches and schools with the usual accessories located on the same lot.

The (A) Residence Districts will permit the use of land and buildings for all classes of dwellings, hotels, lodging and boarding houses, churches, clubs, public and semi-public educational institutions, etc., but will exclude all industries and business.

The Commercial Districts will permit the use of buildings and land for all residence purposes and com-

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mercial or business uses, but will exclude all forms of industries that will be harmful or undesirable in the business districts.

The Light Industrial Districts will permit the uses permissible in the districts mentioned, but will exclude the heavier industries such as blast furnaces, rolling mills, boiler work, foundries, etc., and those industries that contain an element of danger to the districts in which they are located, or such as are noxious or offensive by reason of the emission of odor, dust and smoke. These districts are generally located along or adjacent to the railroads and border the commercial districts, and in some cases the (A) Residence Districts.

The Heavy Industrial Districts permit the location, within their limits, of all industries, not prohibited by laws of the commonwealth or ordinances of the city, with the exception of abattoirs, fertilizer works, garbage incineration, reduction or storage and such like nuisance industries. It is the purpose, of the ordinance, also to exclude the erection of dwellings or tenements in the Heavy Industrial Districts except homes for the use of families of watchmen and others employed continuously upon the premises.

In many of the cities that have previously been zoned an unrestricted district has been provided for. Such a district would, I believe, have met with favor by the Commission except for the fact that our topography is of such nature that many of the better residence districts are contiguous to the lands that would be set aside as the unrestricted districts, and for this reason it has not been deemed advisable to locate any districts that would be open to the more noxious uses.

### HEIGHT DISTRICTS:

The Two and One-half Story Height Districts permit

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buildings to be erected to a height of thirty-five feet. These districts will usually be co-terminous with the "B" Residence Districts.

The Three Story Height Districts permit buildings to be built to a height of forty-five feet and will be applied to the narrow commercial districts adjoining the main traffic streets in the outlying sections of the city.

The Six Story Height Districts permit buildings to be built to a height of seventy-five feet and are proposed as the limit in the (A) Residence and certain Commercial Districts.

The Eight Story Height Districts relict all buildings to a limit of one hundred feet and are applied largely to the Industrial and central Commercial Districts.

The maximum height districts, ten stories, one hundred twenty-five feet are for the central districts where the intensive use of land is recognized.

### AREA DISTRICTS:

The "A" Area Districts require a rear yard having a depth of fifteen per cent of the lot with a side yard on each side of the building having a minimum width of not less than five feet. The main building with its accessory buildings shall not occupy more than forty per cent of the lot and each dwelling house erected or altered is compelled to make provisions for a lot area of at least four thousand square feet for each family.

The "B" Area Districts require the same minimum rear yard as for the "A" District. One side yard of not less than three feet in width is required and this yard must equal twelve and one-half per cent of the width of the lot. The building with its accessory buildings is permitted to occupy fifty per cent of the lot and each dwelling or tenement erected or altered must provide a lot area of at least 2,500 square feet per family.

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The "C" Area District is intended for those sections that will probably be built up with apartment or tenement houses. A rear yard of at least ten per cent of the depth of the lot is required. When a side yard is provided it must not be less than five feet wide or less than two inches wide for each foot of building height. No building with its accessory buildings shall occupy in excess of sixty per cent of the lot. No dwelling or tenement house shall be erected or altered to accommodate more than forty families on an acre or the proportional number of families on the fractional part of the acre occupied by such building.

The "D" Area District is largely within those districts set aside for commercial purposes in the Use Classification. A rear yard having a depth of not less than ten per cent of the depth of the lot is required but need not exceed fifteen feet. Side yards are not required but when provided shall not be less than five feet wide. A building with its accessory buildings shall not occupy more than seventy-five per cent of the interior lot, nor more than ninety per cent of a corner lot, provided, however, that the portion of the building used exclusively for commercial purposes may occupy one hundred per cent of the lot on the first floor. When dwelling or tenement houses are erected within this district they shall not make provision for more than eighty families on any acre of land or the proportional number on such fractional part of an acre as may be occupied.

The "E" Area District is located in the down-town business sector and permits buildings to occupy the entire area of the lot when used for commercial or industrial purposes. When used for residential purposes the "C" Area District's regulations apply.

In addition to the above area regulations a building line set back is provided. When eighty per cent of the

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buildings on one side of the street between two intersecting streets have observed a minimum set back line from the street line no building hereafter erected is permitted to extend beyond the set back line so established.

A further restriction is also provided for tenement and apartment houses erected in any districts containing two or more apartments per floor ; which requires a side yard on each side of the building.

The usual provision of similar zoning ordinances requiring an occupancy permit, the filing of plats, use permits, boundaries of districts, interpretation, validity of various sections, changes, amendments and violation penalties are provided.

## GETTING ACTION IN CITY PLANNING

JOHN NOLEN,

*Town and City Planner, Cambridge*

Few phases of city planning are now more important than the question of how to get action. Experience in this field has also been sufficient to demonstrate that there are right and wrong methods, but it is hard to draw a sharp line between right and wrong methods, because circumstances and local conditions play so important a part. Cities are individual. City plans must be individual. Action on those plans would be different according to the place under consideration and the time when action is to be taken.

A natural test of getting action in city planning is an examination of progress made in the execution of actual improvements. Two general comprehensive reviews of progress in city planning have been made during the last five years,—one in 1917, compiled by the Committee on Town Planning of the American Institute of Architects. It covered a statement of progress in 233 communities and was on the whole encouraging. A more recent report was that containing information assembled by the Detroit City Plan Commission a year ago. It included a statement of city plan commissions in operation, a record of city plans in progress, and a summary of methods of public education employed to secure support for a city plan. This report indicated that the main lines of effort in municipal improvements were zoning, street exten-

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sions, parks and port development. Among some of the cities recorded as making substantial progress in the actual execution of plans are the following: Akron, O., Albany, Bridgeport, Chicago, Cleveland, Cohasset, Mass., Dallas, Tex., Davenport, Ia., Detroit, Erie, Pa., Flint, Mich., Grand Rapids, Mich., Harrisburg, Pa., Hartford, Kingsport, Tenn., New London, Conn., New York, Pasadena, Calif., Philadelphia, Pittsburgh, Reading, Pa., Rochester, N. Y., St. Louis, Trenton, N. J., Walpole, Mass., Washington, D. C.

To one who is at all familiar with the natural and formidable obstacles to the execution of comprehensive city planning projects, the astonishing thing is that so much has been done, especially in the smaller places. In some cases nearly all the proposals have been carried out or are definitely authorized for execution. In others, even though the City Plan Commissions were not able at the time to get official approval of their recommendations, the plans have been partially executed by the City Council or other public authority. Furthermore, the city planning movement is still in its initial stages. Its methods are not yet by any means clearly understood by the public, and very little money is available for the making of careful plans based upon reliable surveys, and the publicity necessary "to sell" these plans to the people for whom they were prepared. The total amount available for surveys and plans in this field in all cities of the United States at the present time is estimated at only about \$250,000.

With the exception of Chicago, Flint and a few other cities and some of the smaller towns, city planning has not yet been taken seriously. Chicago's methods have been more logical, more persistent and more systematic than those of any other large city. Some of

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the main facts to record in Chicago's program are the following:

1. The printing of the report on "The Plan of Chicago" at a cost of \$85,000. This was in the form of a beautiful octavo volume, the very finest example of printers' craftsmanship. It contained 164 pages, and 134 drawings, charts and pictures, including 15 full page, six-color drawings painted by the famous artist, Jules Guerin.

2. The publication of a booklet entitled "Chicago's Greatest Issue—An Official Plan." The basis of this publication was the de luxe Chicago Plan book, issued by the Commercial Club. Many of the drawings of the parent book were adapted to the smaller one. Its 93 pages, carrying the 326 names of the members of the Commission, representing every walk of life in the city, told the story of the Plan of Chicago to all the people in simple, easily comprehended, everyday, language. 165,000 copies were issued and distributed at a cost of \$18,000. These were delivered to every property owner of the city, and to persons paying a rental of \$25 per month and over. "Chicago's Greatest Issue" was sent, on request, all over the civilized world.

3. A notable pamphlet was printed and issued, entitled "Fifty Million Dollars for Nothing." It showed the people of Chicago how they could obtain 1,300 acres of lake front parks, playgrounds and water-courses by utilizing the waste material of the city. It pointed out that by so doing, the city could secure in twelve years, park lands ready for development, and worth fifty million dollars, at no cost whatever to the tax payers.

4. There were many other special pamphlets and reports, but, to cap all, the Commission issued a publication entitled "Chicago's World-wide Influence in City Planning." It was an effort to "keep the home

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fires burning" with community confidence and devotion to its own plan as it was regarded by the rest of the world. This was a compilation of comments and requests for Chicago Plan literature from hundreds of experts, civic workers, municipal authorities, libraries, schools and public spirited citizens by the Commission from all over the world.

5. Following the signing of the armistice in the great war, and the announcement of the reconstruction platform of the Chicago Plan Commission, to which the Chicago newspapers devoted twelve columns, an appeal was made to the clergy of the city to preach from their pulpits upon the humanitarian benefits of the Plan of Chicago. The Commission's "Seed Thoughts for Sermons" pointed out the close harmony between the social work in the churches and the benefits in the plan. This document, together with a resolution, and the reconstruction platform, was sent to every clergyman in Chicago.

6. As a direct result of the admonition "Establish the Plan of Chicago with the people," a school text book was printed, entitled "Wacker's Manual of the Plan of Chicago." This came as an inspiration. The Plan of Chicago text-book was adopted by the Chicago Board of Education in 1912. The first issue was 15,000 copies. It was used as a part of the curriculum of the eighth grade courses. The school authorities followed the wish of the Plan Executive, whose conviction it was that a larger number of students could thus be reached. It was believed, too, that there was value in an appeal to the children at their most impressionable age. More than 50,000 copies of Wacker's Manual have been published for the current needs of the school.

7. After the school book came the Lecture Bureau. A popular lecture, showing more than 200 pictures of

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twenty-four countries of the world, was most carefully prepared, and critics say it compares favorably with the popular lectures of the day delivered by professional speakers. The Board of Education placed the assembly halls of the schools at the disposal of the Plan officials without price. How to attract the people to the Plan of Chicago lectures was the task. The difficulties, however, were finally overcome. As many as 150,000 circular announcements of the lecture were mailed to citizens in a single season. Nearly a hundred school lectures were delivered in one year. The schools were selected in order and to equitably cover the city. This method was continued from year to year, and during the first seven years of the Commission, nearly four hundred lectures were delivered. 175,000 people have been directly reached with the Plan message; that is, one in every fourteen residents of Chicago.

8. One of the chief aids to the effective publicity for the Plan of Chicago was a motion picture campaign. This consisted of a two-reel feature entitled "A Tale of One City." It contrasted the Plan proposals with existing conditions, and was interspersed with scenes of human interest and attraction about Chicago. The reels were shown in more than sixty Chicago theatres to an estimated audience of more than 150,000 people. The opening was at the Majestic Theatre to an audience which packed the house to capacity, and was as representative as a Grand Opera occasion.

9. The most valuable medium of all for publicity for the Plan of Chicago has been the newspapers. Publishers, editors, reporters, feature writers and cartoonists have cooperated intelligently, heartily and generously to carry to the people of the city the great ideas and the far-reaching benefits contained in Chi-

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chicago's Plan. One of the papers prints daily at the top of its editorial column its platform, which contains a persistent endorsement of the Chicago Plan, and an appeal for its support. As Wendell Phillips has well said: "The newspaper is parent, school, college, pulpit, theatre, example, counselor, all in one. Every drop of our blood is colored by it. Let me make the newspapers and I care not who makes the religion and the laws."

Flint's work in city planning is more recent, but is likewise encouraging. Following the preparation of the comprehensive city plan, made directly for the city government and approved by the City Council, the city appointed a City Planning Board and engaged a resident Planning Engineer, employing the maker of the comprehensive city plan as consultant for the Planning Board. This work is only of one year's duration, and yet much has been accomplished already, especially in the control of the acceptance of plats under regulations which require owners of property to recognize the general city plan. A vigorous feature of the publicity work of the Flint Planning Board is the printing of 15,000 copies of the comprehensive plan and report and the distribution of it to all tax payers desiring it at the time when the city taxes are paid. An equally significant policy in Flint was that of the Park Board in the engagement of the City Planner as consultant, and the execution of the recommendations concerning parks in accordance with the general city plan, notably in land takings.

Getting action on city planning is not merely the kind of publicity that is appropriate and possible at a time when a comprehensive plan is prepared or a report published. It rests back on patient methods of education through a long period of years. Toward this end more and more attention is being given to the in-

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clusion of city planning in connection with courses on community civics which are now fairly general in the public schools. Examples of the text-books in use are "Wacker's Manual of the Plan of Chicago;" "The Community and the Citizen" and "Community Civics," by Arthur W. Dunn; "The Building of Cities," by Harlean James; "New Ideals in the Planning of Cities, Towns and Villages," by John Nolen; a text-book in use in the public schools in California; and a new volume entitled "Better Citizenship Through Art Training—A Study Outline in City Planning, Landscape Gardening, Architecture and the History of Art," by Minna McLeod Beck. In a number of cities recently—notably Johnstown, Pa.—the school commencement exercises have been devoted to city planning and community development.

Among the wrong methods of getting action in city planning three may be mentioned. One is the promotion of city planning by a single class of a community, either official or unofficial. The first movement at Chicago was of that character. The city planning work at Montclair, N. J. and Schenectady, N. Y. may also be cited. In the case of Schenectady the following reply was recently received from one of the city officials: "We do not wish to convey the idea that a city plan is not of value, but in this particular case the Park Board put this across without authorization of other city officials, and this plan was never accepted." Another illustration of the use of wrong methods has been excessive or untimely promotion, or the attempt to carry out too big a scheme at one time. The city planning work at Reading, Pa., and Akron, Ohio are instructive examples of this error.

The largest number of failures to get action, however, have been due, as an analysis of the work of the last decade will show, to inadequate promotion and

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publicity. City planning has suffered most of all from the sleeping sickness. The names of a score of cities could easily be given. From my own experience I can cite Madison and Janesville, Wis., Scranton and Lock Haven, Pa., Wayland, Mass., Keokuk, Ia., Niagara Falls, N. Y., Bridgeport and Bristol, Conn.

As an illustration of the attitude of an able, energetic and high minded city official on the subject of publicity as part of municipal policy, I quote the following from Morris Llewellyn Cooke, former Director of Public Works, Philadelphia:

"There is probably no question affecting the administration of American municipalities today which is of greater moment than this one. We have to get rid of the now old-fashioned idea that advertising is a crime. I admit that as a part of my work as a public official I put a great deal of thought on what may be quite properly called advertising. Especially was this so in respect to my annual reports whose chief aim was rather human interest and "easy reading" than dignity of form and diction. It is only as public officials learn to make the public, sometimes against its will, understand their work, that they will get that degree of popular support which will make it possible to do the work in an efficient manner."

Right methods of getting action on city planning should normally include every one of the following, and often, in addition, some special methods adapted to the particular local requirements.

1. An official planning board. Some special official agency in charge of city planning is essential to getting action. The establishment of such agencies and their effective work is helped by a State organization of city planning; such, for example, as the Massachusetts Federation of Planning Boards, or the Penn-

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sylvania Division of City Planning and Municipal Engineering of the Bureau of Municipalities.

2. Adequate provision for the legal side of city planning. Action depends upon legal authority for the establishment of a city plan; the acquisition of land for public use; building regulation and zoning; and city planning finance, including tax and debt limits and special assessment. City Planning law is constantly changing. Its advance depends upon public opinion. "We do not make laws, we discover them."

3. A broad yet sound financial policy. There is a distinction between the cost of the survey and plan and the cost of the execution of city planning projects. The cost of the survey is small, and would be justified usually simply as a form of publicity, even if no immediate action were taken; it would often be valuable in preventing wrong action. The cost of the execution of a city plan may be large, but should be less with a city planning program than without it. A sound policy is well expressed in the following paraphrasing of some statements of the senior Olmsted on public parks:

In scarcely anything to be determined by local public opinion acting upon local legislation and administration, is a city so likely to be made or marred for all its future as in the prosecution of city planning projects.

It must be kept in mind that the plans of cities have come to be what they are by various detached and desultory proceedings, of which the result, as a whole, illustrates penny-wise, pound-foolish wisdom.

The question of the economy of what is proposed in the city plan is less a question of what the work of construction will cost than of what ever afterwards will be required for reconstruction, repairs and maintenance adapted to secure its intended qualities of

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beauty, and to keep it in suitable order for its intended uses.

That those in charge of the city plan may proceed economically they must be able to proceed with confidence, method and system, steadily, step by step to carry to completion a well-matured design.

For every thousand dollars judiciously invested in a city plan the dividends to the second generation of the citizens possessing it will be much larger than to the first; the dividends to the third generation much larger than to the second.

4. Constant, fundamental education of public opinion, year in and year out, in the public schools and in other ways. There should be direct education in city planning, especially as related to local problems. But also, broad education in art and good taste, design, composition, aesthetics and beauty. To my mind the time has gone by when city planners and city planning conferences can afford not to give bold and honest expression to their belief in the place of art and design in public works. As a matter of fact, no city planning report fails to emphasize the importance of civic beauty. The failure of cities is at least as great in appropriate appearance as it is in provision for use—probably greater. It is clear, says a well-known writer, that beauty is neither incidental nor decorative; it is structural and organic. It marks the end of the creative process in every direction, and it reveals the final form. It is not a charm which a man's work may possess or reject; it is essential to the wholeness and completeness of that work. Until he commands it his work is provisional and preparatory. It may be noble and useful, but it cannot be final and enduring.

5. Appropriate, timely publicity on all important city planning projects. Assuming that a publicity campaign is an indispensable feature of a city plan-

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ning program to get action, how can that campaign be organized and carried out? Should the work be inaugurated and directed by the city planner, by the city plan commission, or by some other body? It may be asked, how far should it be the function of one who is engaged to give professional advice to force the client to act upon it? The city planner is not a professional publicity man, and he is not usually a citizen of the city for which the plan is prepared. It is not likely that he has any marked ability as an advertiser, nor that the city plan commission would welcome his participation in local politics. It would seem, therefore, that his contribution would naturally be limited to the preparation, in as popular a form as possible, of his plans and reports, together with a personal and effective presentation of those plans and reports to the public. After that, his active participation in the publicity campaign would be of doubtful expediency and value. The planning board or the city plan commission should be relied upon wherever there is a well organized city planning agency to outline, direct and execute the educational campaign and publicity that should accompany any large city planning program. In no other way can the presentation be wide enough nor the discussion authoritative. The planning board, however, cannot hope to be thoroughly effective unless it secures the active cooperation of the voluntary social, civic and other groups of citizens. The whole public can be reached only by the assistance of chambers of commerce, women's clubs, labor unions, Y. M. C. A.'s, churches and the other organizations to which the people of the city are accustomed in their regular daily life to look for information and guidance.

6. The printing of city plan reports, the discussion of planning proposals, local exhibitions, the use of motion pictures, the aeroplane, etc. All appropriate,

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effective means of publicity, ancient and modern, should be drawn into the service of city planning. The making of public opinion for town and city planning is like making public opinion for pretty much anything else. It is done through the printing press, employing to the full the opportunities afforded by graphic presentation, by the public exhibition of plans, by the moving pictures, if they can be made available, by the distribution of pamphlets and popular leaflets, by public meetings, illustrated lectures, the use of the stereomotograph and attractoscope, and by free and wide discussion.

The printing and distribution of reports is one of the most effective means for bringing to the attention of the general public the importance of the city plan. Therefore, when possible it is desirable to include provision for the printing of the report with plans in the agreement with the city planner.

Modern progress has also made available new methods of publicity. The aeroplane makes possible actual flights for survey and city planning work and aerial photographs are now indispensable features of every complete survey. The motion picture likewise furnishes new and great possibilities for popular education and the awakening of public interest along city planning lines. In connection with these methods there are technical and financial problems which still remain to be solved.

7. A persistent follow-up city planning organization. A complete program for a community survey and city plan should include the following:

1. A thoroughgoing investigation of the subject.
2. An analysis and interpretation of the survey.
3. General city plans and recommendations.

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4. Wide and free public discussion.
5. Community action, public and private.
6. Persistent follow-up work.

In order that the proposals of the city planner may be successfully followed up, it is necessary to provide definitely, in places of any size, some effective city planning machinery in the form of a local office, and also for the continuation of the same kind of service that the preparation of the comprehensive city plan itself involved. A suggestion looking toward these ends, the following is submitted:

A local assistant should be employed, to give all or nearly all his time to city planning. If possible, he should be engaged sometime during the period in which the city planner is at work in the city, cooperating with him.

The local assistant should be a man well trained in city planning, and with some practical experience in that field, even if only for a year or two. A young man growing professionally is distinctly preferable.

Some arrangement should be made for continuing, at least in a supervisory capacity, the services of a widely experienced city planner, preferably the planner who prepared the general comprehensive plan.

The service of a city planner engaged in this capacity might be outlined as follows: (1) to keep in close touch with the progress of the local city planning work through correspondence,—plans of importance to be submitted for criticism; (2) to make visits during the year for the purpose of conference, examination of plans, etc.; and (3) to prepare a brief annual report and review of the year closing, and to map out a general program of work and action for the follow-year.

Finally—all of these methods are necessary to get action that is farsighted and looks toward permanent

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results. With these should go also a recognition that city planning, like other large public projects, depends upon the adoption of plans that take into account what is best not for a class or special interest point of view, but "all things considered," and not from the point of view of today only, but also "in the long run."

## THE USE OF AERIAL PHOTOGRAPHY IN CITY PLANNING WORK.

### COMMITTEE REPORT.

Among the many developments brought about or accelerated by the World War, one which stands out prominently in the popular mind because of its more or less spectacular features, is Aerial Photography. Its development for military mapping naturally led to the more or less logical conclusion, now in the way of being realized that it could also be employed in the preparation of the maps required in civil life. Considerable intensive experimental work has been done in this direction. A careful analysis of the results thus far obtained reveals certain limitations in the methods thus far developed and in the availability of the product. Doubtless many of the draw-backs which now are apparent can be overcome with further experimentation.

The popular interest in aerial photography will doubtless continue for a long period of years, at least until aeroplanes are as common as automobiles. Since more or less spectacular methods are the quickest to be grasped by the big majority of people, and since education is the chief element in the realization of city plans, the use of aerial photographs in such work will doubtless be of fundamental importance aside from any purely scientific use to which they may be put.

The general principles of the methods of making aerial photographs have become so familiar to the general public that any detailed description is not con-

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sidered necessary in this connection. However, certain elements of the process must be mentioned because of the limitations which they impose upon the results that are at present obtainable. Were a camera to be held with focal axis exactly vertical at a given elevation over a designated point for a sufficient length of time to make a proper exposure, a photographic reproduction of the terrain would be secured, assuming that conditions of light and atmosphere were favorable.

In such a photograph, topographical relief would not be visible near the center of the picture. If the lenses were of sufficiently wide angle, however, the edges of the picture would reveal differences in elevation of such objects as high buildings, but on opposite sides of the picture, opposite sides of the buildings would be shown,—easterly faces of buildings on the westerly side of the picture, and westerly faces of buildings on the easterly side, for example. If relief is not desired (as in the case of geometrical mapping), only the central portions of pictures taken in this manner can be used. If on the other hand, some relief is desirable, (as in the extreme case of a so-called "Birds-Eye View"), the camera must be held at an angle, but in that event perspective is markedly introduced, and the opportunity of using the photograph for scale mapping purpose is nullified. To be sure, this element of perspective can be largely obviated by a rectification of the picture through re-photographing it at an opposite angle. Such rectification introduces lack of definition and is correspondingly objectionable.

Theoretically, with a known elevation of the camera and knowledge as to its focal length, it is possible to procure a photograph which is accurately scaleable, providing the terrain is absolutely at a uniform elevation. If, however, marked differences in elevation exists,

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then an element of vertical perspective enters, so that the map is accurately scaleable, only on a single contour. Because aeroplanes must of necessity be operated at relatively high rates of speed, exposure time must be reduced to an absolute minimum. Furthermore it is not yet possible to operate a plane absolutely at a uniform elevation and without rolling or pitching. These motions introduce perspective into the exposed plates, so that the pictures must be rectified if they are to be used in connection with precise map work. In order to effect this rectification, various steps have to be taken. The most important among them is the pre-establishment of a considerable number of points, the distances between which have been accurately determined by triangulation or other precise measurement. This necessity consequently reduces the available field for aerial photographic mapping practically to that now covered with greater or less success by plane table or stadia work, but without the possibilities that are included in those methods of indicating differences of elevation as well as plan. Certain experiments are now under way looking to the perfecting of aerial photographic methods so as to be able to apply to the pictures a stereoscopic analysis which will thus provide means of indicating contours on aerial photographic maps. For this purpose a series of known elevations are necessary in addition to the series of known points in plan. Most progress in this direction is reported from France and Germany. The U. S. Geological Survey is also at work on this problem. Skillful work in operating the plane, in making the photographs, in their rectification, in the preparation of the mosaic and in its final rephotographing, has demonstrated that maps can be made with an error which is less than that involved in plotting transit surveys when the scale is 1 to 10,000. The error can even be kept be-

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low one-hundredth of an inch for scales of 1 to 2,000. The use of a dirigible may also prove advantageous where such an air machine is available (as is the case in southern California at the present time). It may also be possible to work out some scheme of oblique photography with a rectification of the pictures, so that it will be possible to produce results fairly comparable with views drawn in isometric projection. Such isometric views would obviously be much more available in connection with the preparation of zoning maps, for example, than those which reveal no difference in elevation. Until some such development has taken place as is here suggested it will be necessary to supplement an aerial map with a series of obliques taken at a low elevation or from the ground.

This rough outline of the limitations of the aerial photographic process tends to show corresponding limitations in the usefulness of the results obtained for certain classes of accurate work. On the other hand, where the limitations of accuracy are not as acute, the process would seem to have very great advantage, as for what may be called reconnaissance work. Thus, for the preliminary location of highways, railroads, canals, water supply systems, forestry, oil or gas pipe lines, electric transmission lines, the location of industrial plants, the preliminary investigation of suburban districts proposed for sub-division, the planning of estates, of resorts, studies of smoke nuisance, the making of investigations of such features as railroad rights of way, yards and similar kinds of work, the making of studies of street traffic, the making of forestry surveys (where even the principal varieties of trees can be identified), and in similar problems, aerial photography would seem excellent.

Such maps may also be useful in checking those made by the usual methods. In one instance, for ex-

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ample, in connection with the Rochester airplane map, a demonstration was afforded of the fact that a transitman had turned an angle in the wrong direction in locating a minor street. Obviously in the use of any such new device as aerial photography, a new language must be learned, so that the availability of the process is limited at the moment to those who have already acquired the idiom. A certain technique must also be employed to secure the best results. For example, the map must be mounted with the shadows cast downward (instead of placing the north point upward) if differences of slope and elevation are to be rightly interpreted. Certain other elements often enter to handicap the work, such as heavy foliage along streets, often so great as entirely to conceal the width and location of the roadway. While it has been generally considered that the taking of aerial photographs for such work as is here considered can best be done only during certain summer months of the year, during certain hours of the day, and only under favorable conditions of sunlight, difficulties with foliage can perhaps be obviated by winter work. Shadows are sometimes so black as to be equally concealing. That the actual photography is very rapid is demonstrated from the fact that one hundred and fifty square miles have been taken in a period of two hours, but to be sure at a considerable height. The scale of the map is roughly inversely proportional to the height with a resulting scale of 400 feet to 1 inch at a height of 5,000 feet using a twelve inch lens. The speed with which aerial mapping may now be executed is so great, that a record of conditions as of a given date is obtainable which has heretofore been impossible. Several instances may be mentioned, such as the location of shore lines at a given stage of flood or tide (as was done in two hours by the Army Air Service for the 120 miles of

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New Jersey coast line from Seabright to Cape May); the outline of glaciers; conditions with reference to construction projects, such as those for public highways, railroads, canals and large industrial undertakings; the making of inventories of railroad properties as of a specific date, and the registering of the condition of prominent, natural and architectural features on specified occasions; the making of actual "birds-eye views" of interesting objects is now rendered possible and those interested in historical buildings or natural park features can be supplied with dated views which can be compared from time to time for historical and research purposes.

In rough country, like Palestine, a degree of detail can be secured more rapidly and cheaply than by any other means. Similarly, regions once mapped can be rapidly and completely checked from time to time to show changes, and obliques will show how improvements can be, are being and have been made. The city of Washington was completely photographed from the air in two and a half hours with 200 exposures. No reference need here be made of the uses of aerial photography in such lines of business as real estate selling, summer resort and other advertising.

Aerial maps possess much more life than geometrical plans and are correspondingly more interesting. Experience in their use will doubtless lead to a keener imagination and its quicker realization in crystalized form.

Estimates of cost vary widely. The only safe method is to secure figures from some one of the several parties who have already entered the field on a commercial basis. Prices can be secured from Mr. R. M. Preston of the Air Service Corporation, 25 West 43d St., New York, Capt. E. H. Corlett of the Corlett Aero Map Co. of Cleveland, The Aero Service Corporation of Phila-

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delphia, the Aerial Engineering Company of Los Angeles and doubtless others.

For those who are interested, it should be mentioned that an excellent bibliography with reference to Aerial Photography is to be found in the November-December 1918 number of the Professional Memoirs of the Corps. of Engineers of the United States Army.

E. P. GOODRICH,  
ANDREW WRIGHT CRAWFORD,  
H. B. BRAINERD,  
*Committee on Aerial Photography.*

## THE USE OF MOVING PICTURES IN CITY PLANNING

### COMMITTEE REPORT.

The officers of the Chicago Plan Commission have given hundreds of lectures with still pictures but they have never had the moving pictures for various reasons, the chief one being the difficulty of giving a lecture with the moving pictures. With stereopticon views, the pictures may be kept on the screen as long as necessary and the contrasting view thrown for effect. Among other difficulties is the cost, both of the production of the moving picture, and the transportation of a steel both required by law because of the danger of using inflammable films in unsafe assembly halls. Quoting from the Chicago experience:—"The value of the film itself may have to be sufficient to insure its being shown without regard to its city planning features. If this is not the case, the average manager must be appealed to from the standpoint of civic pride and that fact alone lessens the opportunity of having the picture shown. Many local theatrical men classed the Chicago production with advertising films and felt that they should be paid for exhibiting them."

I do not know of any instance where films have been employed in city planning except in the Chicago production entitled "A Tale of One City." This two reel film was helpful because it reached many people that otherwise might not have known about our work. Possibly its main value lay in the fact that it was fea-

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tured at the Majestic Theatre for a whole week and the opening night was a gala affair, all the influential people in Chicago being especially invited and the entire theater being given over to us.

"Afterwards the film was sent around to some fifty or sixty local neighborhood theaters, but as you know the newness of a picture soon wears off and after a while it was no longer sufficiently novel to assure local bookings. Then it was sent on request to a number of outside cities. Under these circumstances it is undeniable that the film was helpful.

"So far as our own production was concerned, I have always felt that if it had never been shown again after the first week at the Majestic Theatre, it would have more than justified the cost and expense of producing it.

"Another obstacle that must be overcome is the matter of making a motion picture sufficiently interesting to the average person. The great majority of theatrical managers claim that people go to the movies merely to be amused and not to be educated, and while they admit that they show travel pictures they maintain that these are in a class apart from the city planning propaganda, which to a certain extent is true.

"The physical difficulties involved are considerable. First, it is hard to select a subject to be photographed in order to bring out the points you want to make. Second, it is difficult to present future plans because being inanimate they produce what is called "still" pictures on the screen in which there is no motion and unless very skillfully done the insertion of the "still" picture in a movie falls far short of the balance of the production, as you doubtless have noticed in many instances."

There should be good opportunities to use motion

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pictures in connection with City Planning propaganda provided a sufficient amount of money is put into the enterprise to make the picture worth while. Such pictures would have to be produced at the expense of a city planning commission or the moving picture so made that the average manager of the moving picture theater may be convinced of its value as a popular picture.

It is an academic question for the National City Planning Conference to produce such pictures in view of our limited financial resources. It should not be, however, difficult for local city planning commissions or bodies that may have funds. Admitting all of the difficulties your committee finds as follows:

1st: That a picture of a city planning development under construction, such as, the Michigan Avenue might be used. Had a moving picture machine been installed at an advantageous place at the out-set and the crank turned once or twice a day the whole history of this improvement could have been recorded from the demolition of the buildings to the construction of the double deck structure, the double deck bridge, and together with the reconstruction of the fronts making use of it once it was open.

2nd: The use of an aeroplane picture showing the general locality of an improvement such as for instance: The Boston Charles River embankment or the Chicago South Shore Park Improvement. In a picture taken from an aeroplane the spectator would be carried over the line of improvement showing the line of existing conditions and subsequently a still picture in color of the improvement thrown on the screen to show the development as proposed.

3rd: A picture of the congestion of slow moving traffic in the down-town streets of a modern business center might be shown taken from a tall office build-

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ing and contrasted with a picture of the traffic flowing freely over some amply improved thorough-fare, in this country or a picture of the flow of traffic on some superb avenue as the Champs Elysees in Paris.

4th: A complete moving picture taken from an aeroplane over the streets and parks of the same city might serve to illustrate the beauty of arrangement of a well thought out and executed scheme and contrasted with a picture of some of our own poorly developed cities.

EDWARD H. BENNETT,  
LAWRENCE VEILLER,  
HERBERT S. SWAN,  
*Committee on  
Moving Pictures.*

## CHAMBERS OF COMMERCE AND CITY PLANNING

ELLIOT H. GOODWIN

*Resident Vice President, Chamber of Commerce  
of United States*

I am invited here not as an expert in city planning—I cannot claim to be such in any degree—nor yet as a business man, but as a representative of organized business. Consequently I cannot talk to you primarily on city planning. When I am called upon to speak it is usually to a Chamber of Commerce audience, and I might prepare myself by study to speak on city planning to such an audience, but to an audience of experts on city planning I must talk Chamber of Commerce, and out of that perhaps some agreement will be arrived at as to the proper relation between the two.

The last generation has given birth to a new force in the life of the community and of the nation. First, locally, much later nationally, and this new force is well worth study and analysis as to what useful function it performs at present and what it portends as to the future. I refer to the modern Chamber of Commerce. By some it is regarded as a menace; by others as a force for progress.

If we seek to find its exact place in the scheme of things it must be admitted that business is a conservative force, but there is room for conservatism in a democracy, and it serves as a balance for radicalism. While the business man is to be found on the conservative side, the business organizations to which he

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belongs are properly described as a progressive conservative force.

The danger that all these commercial organizations run is that of becoming reactionary, but this is not a real danger to the community or to the country because no organization can exist long and exercise a real influence which is purely reactionary. Those who subscribe their money for its support look, and must look, to its doing things, to its accomplishing results, and results are not obtained through an effort merely to keep things as they are.

What then is a Chamber of Commerce? The best definition that I have heard of the modern Chamber of Commerce does not originate with me but is borrowed from a commercial executive of much longer experience in the field than I have had. He defines a Chamber of Commerce as "An organization of business men for the benefit of the community".

Similarly the National Chamber of Commerce is a federation of business organizations for the benefit of the country at large. It has a motto which it seeks to follow, given us some years ago by our present President, that "What is not for the public good is not for the good of business".

Can anyone really maintain that the advancement of business or commerce locally or nationally is not for the public good? Is it not in fact fundamental to all advancement in public welfare? To cite merely a single example: You will recall the Red Cross doctors in Poland, working without medicine and anesthetics, the material which the medical profession itself cannot supply and without which the doctor is rendered largely helpless. Business is the producer of the material things on which, if you insist, the higher things in life are all dependent.

Again, can anyone really maintain that the ad-

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vancement of business should not be sought through organization, when every other form of advancement, including city planning, is dependent on organization? Labor and agriculture seek advancement, as they must seek advancement through organization, and yet they pretend to look on the organization of business as a public menace.

I tell you each and all may be carried too far and tend to become a menace. We have seen this many times, and will see it again many times. Safety lies in the universal ballot, and we have seen this safety valve also work.

In reality, as you know, but a small part of business, but a small part of labor, but a small part of agriculture, is or can be organized. These three organized economic forces do not at the present time work well together; in fact they find themselves primarily antagonistic, but even if they could they would not constitute a majority of the voters.

Then let us stop this silly talk of menace of public interest through organization, and analyze each and every organization from the point of view of what each is contributing to the public good. Here organized business welcomes the challenge, and is willing to be compared with the other organizations of economic forces on the basis of their breadth of view towards promoting public rather than a selfish interest.

The Chambers of Commerce throughout the country, and the United States Chamber, are not devoting their time, energy and money to what will promote the interest of the individual business man. Each and every one is giving from one-half to three-fourths of its time and attention to what it known as the civic or community program. What other organizations, may I ask, do this in like degree?

But it has not always been so. Chambers of Com-

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merce are ancient institutions, transplanted from England by our forefathers. The New York State Chamber of Commerce today is operating under a charter received from George the Third. In their early days and down to the last half of the Twentieth Century they were in conception almost purely commercial, and the local Chambers united, to a considerable extent, in the support of a National Board of Trade, which had not a much broader basis. Many of these commercial organizations were connected with actual trading floors where business was transacted. Meetings were devoted purely to the promotion of the interest of the business men, and there was present in them a clear class consciousness.

I do not say that this form of organization did not justify itself, but I do say that within a generation, or less than a generation, there has come a great change, and the Chamber of Commerce from being an organization of business men for the benefit of business men has become an organization of business men for the benefit of the community.

This movement is too new to have yet become fully organized or standardized or wholly efficient. The modern Chambers of Commerce have not entirely found themselves. In many cases there has been a large waste of money, fruitless of real result, while in others business men have not had the vision to see and properly to support the well-directed efforts of the organization which represents them. But they are finding themselves and standardizing their methods, and they stand as organizations for the benefit of the community, or in the case of the National Chamber, for the benefit of the country. And why?

Simply because what is good for the community, in the long run, is good for the business of a community. Housing, city planning, schools, libraries, playgrounds,

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sanitation, all work for the good of business in the community. They make it a better place in which to do business. They attract business and the location of new industries. They tend to keep industrial labor healthy and contented.

There are some who decry enlightened selfishness as a low ideal, but a divine providence put selfishness into our makeup if not as a guide then at least as a check, and it is to my mind one of the greatest manifestations of the divine plan that we are so constituted that we cannot benefit others without benefitting ourselves, and that we cannot, in the last analysis really benefit ourselves without not only benefitting others but being conscious of it.

Business men are accused of being materialistic, but in organizations (and I am not a business man) I have found them idealistic. Every good movement looks, and must look, to them for support. In fact they give more liberally, as a rule, to charitable, social and welfare movements than they do to their own organizations. They are idealists but practical idealists.

Yet out of the breadth of vision they have displayed in promoting the interests of their community on the civic side there has grown up in certain quarters an entirely false doctrine as to what they are and what they should be. There are some, I hope not many, in this field, observing the success of the Chamber of Commerce in promoting civic development, who would change them from organizations of business men, working for the benefit of the community, into outright community organizations representing all the forces of the community.

This idea is unsound because it is neither possible nor desirable to carry it into effect. Its first effect would be to crowd out of existence all other organizations which represent forces or lines of thought in

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the community. It would become an octopus. It would require universality of membership impossible to achieve. The fact that a few farmers join a Chamber of Commerce, or that a board of Directors of a Chamber of Commerce contains a few organized labor members, does not make a Chamber of Commerce truly representative of labor and agriculture, any more than the addition to a Board of a city planning expert would make such a Chamber of Commerce truly representative of city planning.

The influence of a Chamber of Commerce comes from the fact that its membership is homogeneous. To attempt to introduce elements of all forces in the community and properly to represent them would change a Chamber of Commerce immediately into a political party.

It is equally true that a Chamber of Commerce cannot function successfully along all lines. Its scope though broad as the interests of business in community life must have its limits. It cannot, for instance, replace a medical association or a bar association. It can only foster, it cannot replace, a city planning organization, and it cannot afford at all to enter the field of a political organization.

How can it foster and promote the work of a city planning association, and what legitimate interest has business in city planning anyway? Obviously it can foster it by endorsing it and supporting its work, both morally and financially. But the interest of a Chamber of Commerce in city planning and the results achieved by city planning is perhaps too manifest to require explanation, even to those who have the narrowest conception of the function of a Chamber of Commerce.

I leave it to such men as Mr. Wells and other adventurers in the field of political philosophy to decide

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whether the world at large can properly be designated as a workshop, but I am ready to maintain that this is a proper description of a city or a community, and that it is a wise policy to look upon an industrial city from the point of view of its being a workshop or a factory.

Is this necessarily reducing the conception of a city to a low level? In my opinion it is one of the finest of American ideals that all men should have a useful occupation. Other nations may have found benefit from the existence of a leisure class, but America is still young and we have not found the need of it yet. We spend more of our waking hours at our work than at any other one thing, and therefore the conditions under which we work are of prime importance, not only to the work itself but to our outside lives as well.

The mushroom growth of our industrial cities, the steady trend of people from country to city, creates a condition very much like that of a factory—a factory, for instance, which has grown from a blacksmith shop to a large car manufactory. This growth has come about more quickly than anyone has had time to plan for it, and the industrial city finds itself an overgrown and inefficient workshop. It needs the application of efficiency engineering, of which we used to hear so much, in combination with human engineering, precisely as the overgrown factory needs the application of the same remedies.

I conceive of city planning in its essence to partake of both efficiency engineering and human engineering as applied to the city rather than to the factory. Of course, I would not discount its aesthetic features, but these are not wholly overlooked even by the efficiency engineer in his works within a plant. It is noticeable that our factories are becoming more sightly, that more and more attention is being given to light and

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air, and to making the surroundings in which men work pleasanter to the eye.

City planning may be applied and should be applied to the layout of new cities. It should keep pace with the industrial growth of a city, but its most useful application at the present time in America is to the overgrown industrial cities requiring surgical treatment as well as medical treatment to make them truly wholesome.

The readiness of the American business man to scrap all his machinery when through new invention it has become less efficient, to revolutionize his plants or to move them elsewhere in order to secure better economic or labor conditions, is a constant source of wonder to the old world. He should, and will, I think, be found equally ready to back the enterprises necessary to increase the efficiency of the city as a workshop, to improve its transportation and outing facilities, so important to the efficiency of his working force, when once the need is clearly put before him. It is exactly within his line of thought, for it is the kind of thing which, on a smaller scale, he is engaged in every day. If he did not have it originally, he has through his Chamber of Commerce come to have a great pride in his city, in its improvement as a place to live in, in its aesthetic value. In your movement, which means so much for the future of our city life and of our citizenship, I think you have no reason to believe that you must hesitate or compromise because of the lack of support from the business end of the community. That support will be forthcoming and in full measure when once your practical plans have been clearly explained to them.

## PLANNING THE ATTRACTIVE TOWN

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Shortly after the Armistice I visited the hill-top village of Montfaucon where the American troops made such a heroic assault. When the aged Mayor told me that the French Government had taken it over to keep forever as a memorial of the war, I asked him where the inhabitants were going to live. He took me down the southern slope of the hill and there on a plateau showed me the beginnings of the new town with broad streets and open spaces, with houses set well apart, and with good sanitation and with impressive sites for the town hall, the school and the church. It was the model town of the future.

Montfaucon is only one of three thousand cities, towns and villages that are now planning for the future, for even when Paris was in danger of falling, the French legislators were thinking of the future and shortly after the Armistice they enacted a compulsory city planning law by which every city throughout the country and every community, no matter how small, in the devastated regions must make a complete city plan.

Sometimes it works out as in the little town of Eix which for four long years was in "no man's land" with the result that today it is what is known as a knee-high town. The Mayor of Eix came to us one day at the Renaissance des Cites much perturbed and

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showed us a plan for the future Eix that had been made by a local architect. Unfortunately, this architect had only just graduated from school, where he had been working on monumental projects, and so for this little town of only a few hundred inhabitants he had laid out great boulevards, open spaces, parks and civic centers; enough for a city of half a million. We showed him how he could do all that was needed in the way of planning for Eix by widening a street here and perhaps cutting through a new street to the railroad station and by grouping his public buildings and by widening out some of the narrower lots in a practical way, all of which would cost very little money.

Reims, famous through all history, far and away the largest of the devastated cities, came to us at La Renaissance des Cites and asked us to help with their plan. Then for a number of months we worked night and day with the Mayor and the City Council and the leading citizens of the town to help them solve their problems and to provide for an eventual industrial center of three or four hundred thousand inhabitants. Night after night the City Council met and discussed with rare intelligence the often radically new ideas which we presented to them. They finished by adopting a set of plans which preserved all that was worth while in the history of the town and almost all of its glorious monuments, but at the same time did provide for adequate circulation of traffic, for better railroad, freight and passenger facilities, for a big canal port, railway belt lines, industrial centers, working-men's garden suburbs, playgrounds, parks and parkways, community centers and a worthy civic center.

The Renaissance des Cites proved to be a most interesting group to work with composed as it was of the leading architects, engineers, sanitarians, lawyers and social workers of France, for one and all they give un-

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stintingly of their time and experience to help the town fathers of the devastated communities improve conditions as they rebuilt. They solved problems of all sorts from sanitation to the design of public buildings and thereby are helping vastly to raise the standards of civic development.

One thing that was particularly striking was the fact that the French did not confine the use of the "police power" of the State to controlling those things which were dangerous or unhealthy but they regulated ugly things too. They said that it is just as reasonable to use the "police power" of the State to control the things that are offensive to the eye, as to regulate, as we do, the things that are obnoxious to the nose or to the ear.

The Renaissance des Cites has found that the most effective way to arouse interest in city planning is to create a model town so they have adopted the village of Pinon at the foot of the Chemin des Dames and are moving the town bodily to a new site more favorably located and are there creating a village in which they are making a demonstration of all that is best in modern ideas of civic improvement. They are most appreciative of the co-operation of Americans both with their ideas and with their money.

To return to America we find that city planning has had a wonderful spread especially within the last year or two since the war. Cities and towns, large and small, from California to Maine are thinking ahead. They are trying to avoid the mistakes of the past and to plan with vision for the future.

However, through it all there has been a skeleton in the closet. I want to tell you a bit of inside history. Twelve years ago when the first National City Planning Conference was convened in Washington it was felt by those present that city planning was get-

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ting into bad repute from being linked up with the "city beautiful," as it happened that most of the previous planning had been in the way of civic centers and city beautification with which the practical business man had had little to do. He thought it was a waste of money and so to pander to him the City Planning Conference went to the other extreme and from that day to this the "city beautiful" and questions of aesthetics in city planning have been taboo at all of the National City Planning Conferences.

Today the city planning movement is strong enough to stand on its own feet and therefore I believe it is of the utmost importance that we should decide whether we can afford to suppress the beautiful in our planning. I cannot believe that we are so materialistic, so dead to the finer things of life that we do not feel the need of having attractive as well as useful surroundings. After all, is not the suppression of the beautiful in our planning merely another manifestation of that puritanical mask which so many of us have inherited.

Does the good business man despise himself because he has a charming home or a highbred horse or because he takes his vacation in the midst of beautiful natural scenery? And yet for fear of offending him we condemn him to live on a soul-killing "Main Street".

Some of us have thought that the good business man despises beauty as the vagary of long-haired dreamers and yet we know and he knows that unless we have vision we perish. And after all he loves beauty in his leisure hours even if his cult may forbid him to think of beauty in business hours.

Some say that beauty in surroundings is for women and the children. Of course it is, and all the more reason why we should provide it for them. The wage-earner too has a right to attractive surroundings. He does not like to live in a sordid slum any more than

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anyone else; he does not do it by preference. The least we can do for him is to give him a place where he can go with his family of a holiday and feast on the beauties of nature in a nearby park or reservation.

Of course, there are many men who will say at first thought that beauty costs a lot of money; that making the town more charming simply adds to the tax burden. This is an insidious fallacy. It arises from the fact that most people, who haven't given thought to the matter, fail to realize that charm and attractiveness do not mean the expenditure of extra money. What it does mean is the applying of taste and ingenuity to the solution of the problem in hand to eliminate the ugly by better design and often by simplification.

A short time ago a man wanted to build a store and office building on Fifth Avenue, New York. An architect, a friend of mine, went to see the owner and after talking with him a few minutes discovered that there were forty or fifty other architects after the job and that he stood about as much chance as the proverbial snowball, so he went home and forgot about the matter. A week later, to his surprise, he received a request from the owner to come and see him. To his stupefaction the owner said, "I have decided to retain you as my architect". When he came to know him a little better he asked the owner why, on such a short acquaintance, he had decided to retain him and the Jewish owner said, "When you came to see me the other day I looked you over and I noticed in particular your cravat and saw that you were getting a three-dollar effect for seventy-five cents. I said to myself that any man who could do that sort of thing was the man I wanted to design my building." After all this is what beauty means in city planning. It means taking the money available, adding taste and ingenuity to it to produce a far more attractive effect for the same price.

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Beauty in design is a matter of form, of proportion, of color, of contrast, of variety and of inspiration. Take the Church of St. Thomas on Fifth Avenue, New York. It didn't cost any more than many another church and yet why is it that we cannot go by it without stopping to look at it? It is because it is the inspired work of a true artist. Not only are all the rules and principals of good design brought into play but the architect had that real inspiration to depart from the rules which characterizes all great art.

Beauty also means the preserving of the personality of a town. A few hours ago as I was sitting in this same room at a previous session, I subconsciously caught a glimpse of the hills across the Allegheny River. A strange sensation came over me of being in an alpine valley and looking across at the mountain sides dotted with peasants' chalets. Then, when I came consciously to analyze the impression I found that after all the frame work was all there, the topography, the vegetation, the grouping of the buildings and their general form was almost identical with that of the Alpine hillsides. Pittsburgh has a distinct personality in these hillsides which it is her privilege and duty to preserve. Personality is the soul of the community. It is often wrapped up in its history. Think of the older parts of Boston, Quebec, and New Orleans. In their charm we have a survival of the personality of the town despite the encroachment of modern rubber-stamping industry.

Beauty is order. It starts with the well kept front yard or back yard. It continues in the well kept tree lined and grass bordered suburban street. It continues with a conscious desire of foreign groups to clean up their soul-killing slums. Even Cleveland's famous civic center was mostly a matter of pulling back and rendering useable a blighted district. Zoning is es-

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entially a matter of putting order into the growth of a community. Order doesn't mean a monotonous, uniform regulating, but it does mean a place for everything and everything in its place. It means the preserving of a consistent and appropriate harmony in each part of the town. Zoning does this and at no cost to the community.

Some are afraid of the "city beautiful" because they think it will mean the squandering of public funds by politicians. However, we have very effective ways nowadays of controlling that sort of thing. We have our Art Commissions in our largest cities which have done remarkably effective work not only in keeping up the standard of public structures but in actually saving money to the community for in the majority of cases the Art Commissions, in improving the design of a public structure, have succeeded in simplifying it and reducing its cost, usually by suppressing superfluous applied ornament. We also have Foundations in thirty of our cities with whom funds can be left in trust for the beautifying of the city through public buildings, fountains, statues, monuments, parks, playgrounds and in many other ways.

Yes, beauty pays, even as an investment. Paris, Vienna, Munich or Venice will certainly bear witness to this fact and to a considerable extent American cities, such as Newport, Washington, San Diego or New Orleans, can say the same. This fact is again corroborated in various of our best suburban housing developments such as Roland Park, Forest Hills Gardens, the Country Club in Kansas City and many others. In fact, today real estate men are using the charm of layout of certain towns and subdivisions and the order induced in them by zoning one of their best talking points in selling property.

Even the Courts uphold aesthetics in certain cases

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as a proper motive of the exercise of the "police power". Of course this has always been done abroad but latterly in America our billboard legislation and the recent opinion of the Massachusetts Supreme Court on zoning have admitted aesthetics as a supplementary reason for the exercise of the "police power" of the State. It is true that in talking about zoning and other laws for the control of the use of private property we give as our excuse health, safety, morals and general welfare but really behind it all we have to admit to our selves that a principal actuating motive is beauty and order.

Beautiful surroundings are an inspiration. Time and again I have heard people remark in the wonderful great hall of the Harvard Club in New York, that it had a strange effect upon them. Coming in there after a hard day's work just to sit in that room was soothing, then refreshing, then inspiring and then inductive of creative work. No matter how indifferent we think we are, we are all influenced by our surroundings, and the more beautiful they are the happier the effect.

Beauty inspires pride. The way to make a man proud of his home or of his city is to have it appeal to him through his eyes. He may be interested in a better transportation system or in an improved port and terminal development but if you are going to arouse his enthusiasm and make him a royal rooter for the community you must give him something for his eyes to feast upon. Any one who has tried to raise money for a project knows that it is far easier to get it for a beautiful thing than for something that is exclusively practical. That is why it was so easy for Chicago the other day to raise the \$100,000 needed to build the interesting pylons on the Michigan Avenue bridge. That is why the City of Lincoln, Nebraska finds it so easy to improve the parts of the city leading up to their striking new State Capitol.

## CITY PLANNING CONFERENCE

Beauty is the soul of the community. Do we dare take the responsibility of stifling it? With our eight-hour day we have more leisure now, more time to enjoy life; what are we going to do with it? Are we going to let the young run amuck because we fail to realize our duty in providing them with attractive surroundings? Just because the last generation did not provide for us is no reason why we should fail to meet our obligations to the next generation.

Latterly we have been making a fetiche of the efficient, excellent as far as it goes, but more and more we have been reducing the world to a soul-killing machine. It is a great responsibility that rests upon us. The mass looks to us for leadership because they recognize that we have the competence to solve their problems effectively. In fact, if we do not lead who will? It is our duty and our privilege to show how our towns can be made healthy, safe and comfortable. Thus only can we make them an inspiration and a joy to all.

## CITY PLANNING CONFERENCE

### RESOLUTIONS ADOPTED BY THE CONFERENCE

*Resolved*, That it is the opinion of the National Conference on City Planning that every city should try to create conditions that will make one family detached houses possible for people with small incomes: and further that in zoning the largest proportion of residence districts should be such that the regulations will tend to produce one family detached houses or one family houses in small groups.

*Resolved*, That the National Conference on City Planning favors legislation by Congress that will establish a Federal Housing and Town Planning Bureau or Service, and that the President of the Conference be requested to appoint a committee of three to aid in the securing of such legislation.

*Resolved*, that the National Conference on City Planning hereby expresses our hearty appreciation of the many courtesies which have been extended to us by the City of Pittsburgh, the City Planning Commission of Pittsburgh, the County of Allegheny, the Allegheny County Planning Commission and the various associated organizations, which have so generously effectively contributed to the success of this Conference; to the city and county officials and departments which have given it their official and personal recognition, encouragement and aid, particularly with respect to the admirable and highly efficient police management of the automobile tour; to the press of the city which has shown an active and sympathetic interest in our proceedings; and to the citizens of the city and county, including the women who have given us the inspiration of their presence, for their gracious hospitality and untiring efforts in making our visit to this city an occasion of keen pleasure and great profit.

## CITY PLANNING CONFERENCE

### ORGANIZATION OF THE FOURTEENTH CONFERENCE

At the business meeting of the Thirteenth Conference held on May 11th, 1921, seven members of the Board of Directors for three years were elected as follows:

NELSON P. LEWIS

EDWARD M. BASSETT

ROBERT H. WHITTEN

B. A. HALDEMAN

JOHN NOLEN

GEORGE B. FORD

T. GLENN PHILLIPS

## CITY PLANNING CONFERENCE

### OFFICERS AND DIRECTORS

*President*, LAWSON PURDY, *New York City*  
*Vice-President*, GEORGE B. FORD, *New York City*  
*Secretary and Treasurer*, FLAVEL SHURTLEFF, *Boston, Mass.*

For three years:

NELSON P. LEWIS, *New York City*  
EDWARD M. BASSETT, *New York City*  
ROBERT H. WHITTEN, *Cleveland, Ohio*  
B. A. HALDEMAN, *Harrisburg, Pa.*  
JOHN NOLEN, *Cambridge, Mass.*  
GEORGE B. FORD, *New York City*  
T. GLENN PHILLIPS, *Detroit, Michigan*

For two years:

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MORRIS BLACK, *Cleveland, Ohio*  
MORRIS KNOWLES, *Pittsburgh, Pa.*  
THOMAS ADAMS, *Ottawa, Canada*

For one year:

FREDERICK L. OLMSTED, *Brookline, Mass.*  
LAWRENCE VEILLER, *New York City*  
ANDREW W. CRAWFORD, *Philadelphia, Pa.*  
CHARLES H. CHENEY, *Portland, Oregon*  
BEN. H. BERKSHIRE, *Kansas City, Mo.*  
NOULAN CAUCHON, *Ottawa, Canada*  
E. H. PATTERSON, *Detroit, Michigan*



# THE HISTORY OF THE

## REIGN OF KING

OF GREAT BRITAIN  
 AND IRELAND  
 FROM THE DEATH OF KING

CHARLES THE SECOND  
 TO THE DEATH OF KING  
 WILLIAM THE THIRD  
 IN THE YEAR OF OUR LORD  
 1688.

BY JOHN HUGHES  
 ESQ;  
 OF THE MIDDLE TEMPLE  
 ESQUIRE.

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